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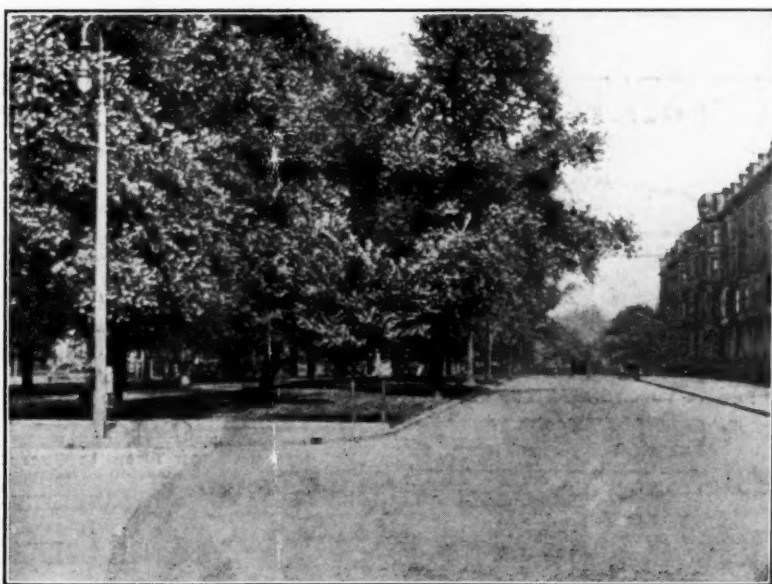
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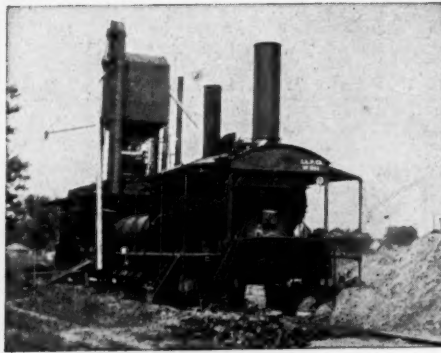
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# Municipal Journal

Volume XLIII

NEW YORK, AUGUST 30, 1917

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## SEWERAGE SYSTEM OF DAYTONA

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Complete Collecting and Treatment Systems for a Florida Town—Screening, Chlorine Disinfection and Pumping of Sewage—Fourteen Ejectors Operated by Compressed Air at Several Lifting Stations.

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By GEORGE A. MAIN.\*

Until the new sewerage system at Daytona, Florida, was put into operation in the fall of 1916, sewage waste was disposed of either by numerous independent private sewers discharging by gravity directly into the Halifax river (on the western banks of which the city is situated); by cesspools in those sections of the city which, on account of insufficient fall or on account of distance from the river, could not be practically served by the sewers; or by the bucket system which prevailed almost exclusively in the colored sections.

Daytona had already attained a population which justified an efficient sewerage system. But even if this were doubtful, Daytona is a winter and summer tourist city, and in catering to well-to-do northern tourists it is good policy to be guided by their sentiments and keep in advance of actual requirements along sanitary lines. Again, and of scarcely less importance, was the fact that for years the oysters which abound in the waters of the Halifax had been considered, and were in fact, unfit for table use. This last fact emphasized the importance of providing a system designed to disinfect the sewage and eliminate stream pollution, which would again permit the use of the oysters as they had been prior to the inroads of civilization—huge tree-covered mounds of oyster shells on the river banks bearing mute but irrefutable testimony to the position which the Halifax river oyster had held among the foods of the aborigines of the east coast of Florida.

Accordingly, there was voted in 1914, and subsequently floated, a bond issue of \$175,000 for "Sewerage and Drainage." The question of type of system was left to consulting engineer George W. Fuller, of New York City. The local engineering, both preliminary and construction, was in the hands of C. M. Rogers, of D. D. & C. M. Rogers, an old-established Florida firm of civil engineers. This sewerage system has now been in successful operation for several months.

About ten per cent of the proceeds of the bond issue were devoted to drainage, as suggested by both wording and intention of the bond issue. A prominent ridge extends through the city, paralleling the river, and about one-sixth of a mile therefrom. Supplementing the drainage previously provided exclusively by several "canals" constructed hundreds of years ago by the Spaniards when they held this territory, but which

were insufficient and subject to rapid stoppage by vegetation, the bond issue has provided two large gravity drains reaching from the flats west of the ridge, under it to the river. This drainage is of very great value, particularly during the fall rainy season. It is chiefly with the sanitary sewerage system, however, that we are at present interested.

As a basis for cost keeping, the investment of the proceeds of the bonds and current outlays for enlargements are classified as follows:

- Tangible general assets (administrative, recording and accounting equipment);
- Intangible general assets (preliminary and engineering costs);
- Operating management properties (tools, etc.);
- Sewage *collecting* system: Sewers, manholes, flush tanks, etc.; air lines and ejectors;
- Sewage sterilizing or *disinfecting* system;
- Sewage *disposal* system: Equipment for separating and handling *solids*; *liquids* disposal system;
- Drainage system;
- Miscellaneous assets;
- Funds.

The above, the order of which is to some extent suggested by the course of the sewage through the system, presents an idea as to the construction and equipment entering into the sewerage system, the parts of which will be taken up in the above sequence.

### SEWAGE COLLECTING SYSTEM.

The first step in the disposal of sewage is obviously its collection. Primarily, the sewage collecting system comprises the house sewer connections, lateral and trunk sewers, flush-tanks, manholes and lampholes. To insure sufficient grade, to avoid deep cuts through the ridge above referred to, and to avoid deep cuts through ground peculiarly troublesome because of ground water, there was embodied in the sewage collecting system a relay equipment composed of air-operated sewage ejectors, which at certain centers collect the sewage which does not flow to the plant by gravity and boost it to a higher elevation, from which it flows to the plant by gravity.

At the date of this writing there have been 360 house and hotel sewer connections made, which number is of course being increased daily.

With the exception of short stretches of cast-iron

\*Superintendent, Board of Public Works.

sewers under railroad tracks and also from ejectors to receiving manholes, the collecting sewers are wholly of vitrified pipe, in sizes ranging from 8-inch to 24-inch, distributed as follows:

Eight-inch, 43,450 feet; 10-inch, 9,957 feet; 12-inch, 14,325 feet; 15-inch, 5,014 feet; 24-inch, 733 feet.

There are 14 flush-tanks in the system, all of which will probably not be placed in use on account of the slight seepage and joint leakage providing enough flush water at some points without resorting to the tanks. There are 139 manholes and 51 lampholes in the system.

The compressed air for operating the 14 Shone ejectors is supplied from a 4-foot by 20-foot air receiver, located in the power plant (appearing at the extreme right in the view) and maintained at air pressure of about 25 pounds by two compressors of 100 and 150 cubic feet per minute capacity, respectively. The air is delivered to the ejectors through about 3 miles of "Universal" pipe, 4 inches in diameter at the plant to 2 inches as the pipe branches to the several ejectors. The 14 ejectors are erected in 7 reinforced concrete pits, 5 situated on the river side of the ridge in the white sections of the city, the other 2 serving the colored population at some distance west of the ridge, not practicably available by gravity alone.

#### DISINFECTING SYSTEM.

A manual control chlorinating device has been installed to accomplish the disinfection of the liquid portion of the sewage, the arrangement being such that the chlorine may be applied either immediately upon the entrance of the sewage to the plant, or under the sewage screen after the solids have been screened out; the practice being to apply a small part of the chlorine to the unscreened sewage, the bulk of the disinfection being under the screen.

This chlorinating device, just visible on the wall at the extreme left of the accompanying interior view, delivers to the sewage a stream of chlorine at a definite fixed rate of so many pounds per 24 hours. In this respect the manual chlorinator differs from the automatic chlorinators, which continuously change the rate of flow of chlorine to suit the constantly changing rate of flow of sewage. This proportioning of the chlorine to sewage flow is based on the assumption that so many pounds of sewage should have so many pounds of chlorine disinfectant, an assumption of doubtful correctness, since the analysis of sewage during different periods of the day shows that its composition is very different at night from the day analysis, and different during the portion of the day when influenced by industrial wastes from the periods not so affected.

Thorough disinfection of sewage by a manual control chlorinating device can be assured by applying a known excess of chlorine at all times, adjusting the chlorine as the sewage flow is known to increase or decrease. Instead, however, of attempting to adjust the chlorine to a very uncertain and not easily measured flow of

sewage, the flow of sewage has been automatically adjusted, by a device originated by the superintendent of the plant, to the constant chlorine flow, thereby insuring continual and correct proportional adjustment of sewage and chlorine. This device, which permits sewage to enter the plant from the trunk sewer only as fast as the particular pump in use is discharging the sewage, is essentially a rate controller, a float in the underscreen chamber maintaining a constant level in the chamber, an additional feature especially desirable in connection with the operation of the screen. The tendency to chlorine economy in the use of this equipment is apparent. The sewage is allowed to accumulate in the trunk sewer for a period of a few hours, during which the composition of the sewage is practically constant. One or more of the 3 centrifugal pumps is then started, the pumping capacity being at the rate of either one, two, three, four or five million gallons daily. The chlorinator is at the same time started and adjusted to the strength of the sewage and the rate of pumpage.

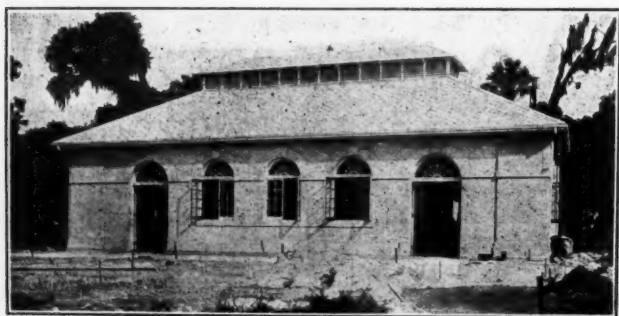
A water level indicator inside the plant shows the height of the sewage in the nearest manhole, thereby preventing excessive accumulation of sewage and also showing the operator during pumping how rapidly he is gaining on the flow of sewage from the city, the aim being to have the trunk sewer empty at those times in the day when the sewage composition changes most abruptly. Attention to the apparatus is required only once in several hours and the device is in effect entirely automatic in its adjustment of the chlorine and sewage. (The device is seen in the view below the floor level and just beyond the screen, which appears in the left foreground.)

#### DISPOSAL OF SOLIDS.

After passing from the trunk sewer through the control valve through the invert and its accompanying coarse bar screen, the sewage flows onto a rotating Riensch-Wurl screen, from the surface of which revolving brushes remove the screenings into galvanized steel receptacles. (A very small segment of the screen is in view just to the left of the suspended chain hoist, which serves for removing the screenings.) As noted above, the automatic control valve maintains a virtually constant level of sewage in the pump suction pit. This level, being independent of the rate of flow, except in that a maximum suction head insures maximum pump output, is determined by the elevation of the screen. Maintaining a maximum elevation results in the utilization of the maximum screen area, the volume of water below relieving the excessive strain on the screen incident to volume of sewage on the screen, through the buoyant effect of the high underscreen level. The screenings fall into cans of convenient size for handling and are drayed to a dumping ground outside the city. There is a decided tendency for the solids to be brushed through the screen, and screenings fall far short of totaling the amounts usually computed, the particles passing through the screen being so small as to readily further diminish in size and be acted upon by the chlorine.

#### DISPOSAL OF LIQUIDS.

The underscreen pit is the suction well for the centrifugal pumps. Three De Laval pumps, one of one million gallons daily capacity and two of two million gallons capacity, against a static head of about 15 feet, discharge the sterilized screened sewage liquid through about one and one-half miles of 14-inch cast-iron outfall to the river, which it enters at the southern extremity of the city limits.



BUILDING CONTAINING POWER PLANT.



Two 15-horsepower La Vergne crude oil engines generate the power for driving the centrifugal pumps (which in the view are concealed in the pit at the right), for driving the compressors (one of which is shown in about the center of the photograph), for driving the screen through an angle belt and a below-floor shaft as shown, for driving the small electric generator which lights the building and grounds, and for driving a small rotary pump for emptying cars of fuel oil into the elevated storage tank. Not shown in the view, but symmetrical with respect to the floor location, are the other engine and the other compressor, the end of the engine room not shown in the view also containing a small gasoline engine-compressor unit for compressing air for starting engines. The tool board is located on the wall at the photographer's rear.

While the enlargement, operating expense and upkeep of this very complete sanitary system undoubtedly amount to more than was being individually spent in connection with private sewers, cesspools, etc., the feeling of safety, as far as individual and community health conditions are affected, the gradual elimination of obnoxious odors and ill appearance in an otherwise beautiful river, and the rendering of its abundance of fish, oysters and crabs harmless as a diet, and the satisfaction of enjoying with approving tourists the best possible sanitary conditions—all these are contributing factors to the bountiful compensation of the taxpayers for the expense incurred in providing this up-to-the-minute sewerage system.

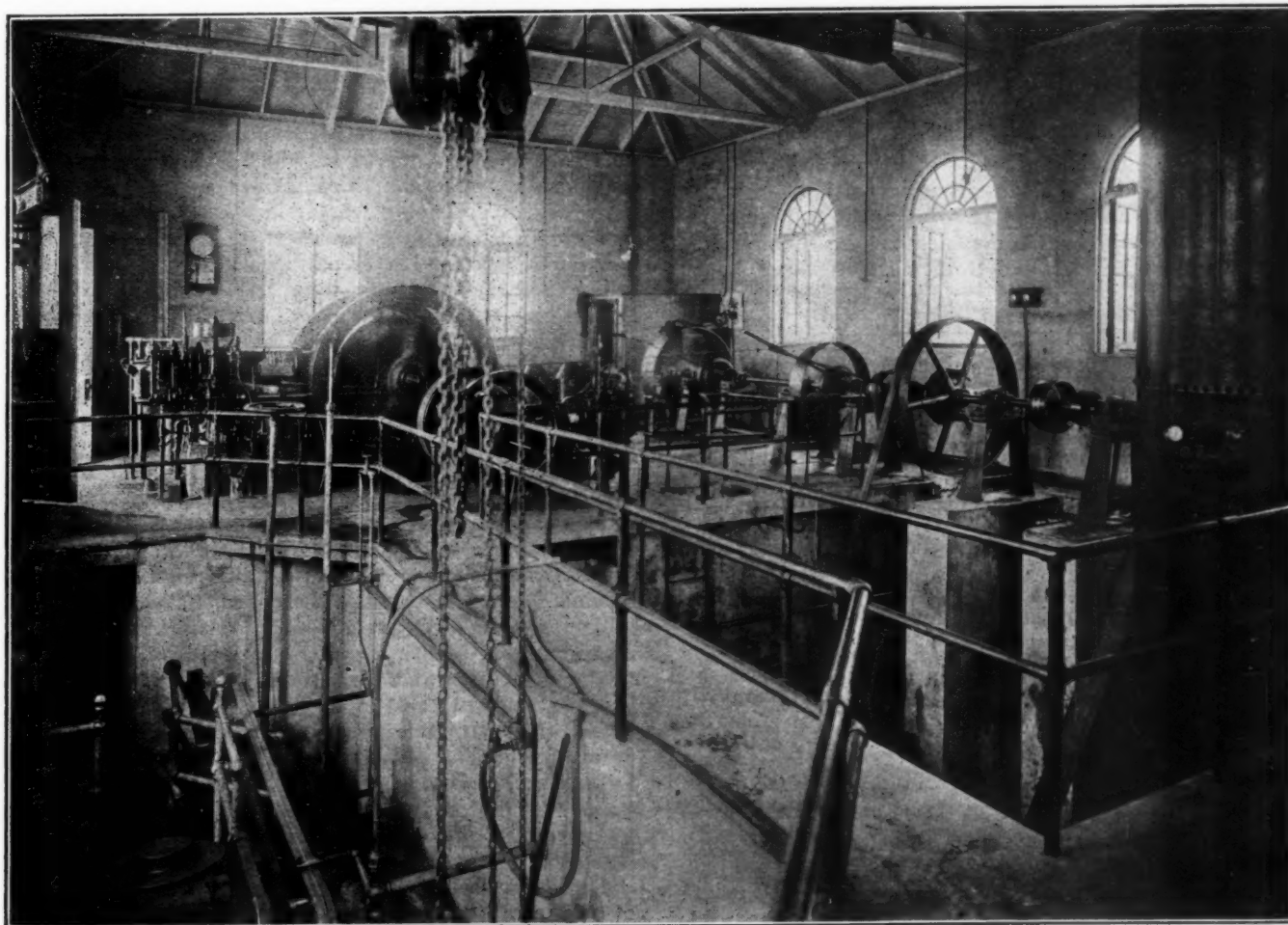
#### UTILIZING OLD TIN CANS.

Information is given by the U. S. Bureau of Commerce, in its "Commerce Reports," of methods by which tin cans can be utilized if considerable quantities be collected, it being therefore especially applicable to municipalities or private individuals collecting in municipalities.

Tin cans may be detinned; or friction-top cans may be cleansed and used in the households; or the caps may be removed from used cans, which may then be filled with paint, chemicals, etc., and new caps applied. In detinning, the products are steel scraps, used in open hearth furnaces; tetrachloride of tin, used in the silk-dyeing industry; pig tin, used in making tin plate; babbitt metal and solder; and solder ashes, which can be refined into solder.

Detinning requires a very expensive plant, the cost probably exceeding \$500,000 or more, and there are believed to be only two detinning companies in this country that utilize old tin cans. These companies purchase tin plate scrap from can makers and others, and old tin cans from junk dealers and community organizations; from 10 to 25 per cent of their capacity being devoted to old tin cans. The cans are bought in car-load lots at a fixed price per ton, and are ordinarily divided into three classes:

1. Unused, empty, unruined tin cans not exceeding one gallon in size, with or without paper labels attached, but otherwise free from foreign material such as water,



INTERIOR VIEW OF POWER PLANT BUILDING.

At extreme right is compressed air receiver for operating Shone Ejectors. Top of Riensch-Wurl screen is just visible at the left foreground. Beyond this, in the same pit, is the automatic chlorine adjuster devised by Mr. Main. The chain hoist is used for removing the screenings. The pumps are in the pit at the right.

ashes, etc., and from paint, varnish, white lead and similar contents insoluble in water.

2. Used, empty and unruined tin cans not exceeding one gallon in size, and otherwise as described in class No. 1.

3. Used, empty, and unruined tin cans more than one gallon in size but not exceeding five gallons, and otherwise as described in class No. 1.

A higher price is paid for class 1 than 2 and for 2 than 3, except that if the classes are not packed separately the price is that of class 3. The cans should not be too tightly compressed to prevent cleaning before detinning.

The department asked the two detinning companies whether they could suggest any way of increasing the domestic detinning of used tin cans, and the companies suggested the creation in each of the large centers of the country of an organization for the collection of used tin cans, stating that, if such collection could be so maintained and a fairly constant quantity of cans could be assured, the companies would be willing to increase the capacity of their plants in order to meet the increased quantities resulting from such effort. They stated that they would be glad to cooperate in any organized effort toward making such collections throughout the country. They stated, however, that the amount of chloride of tin at present produced exceeds the demand for it, and they would not increase the capacity of their plants for manufacturing this product of the process. They also suggest that householders be encouraged to segregate empty cans so that they can be collected more economically and promptly, and also to so store them as to avoid rusting, which renders the cans useless for detinning.

The department suggests that State councils of defense, chambers of commerce, boards of trade, and other trade organizations could be of great service to the country at this time by considering the matter from a local standpoint with a view to eliminating unsightly dump heaps and at the same time increasing the pig tin supply of the country, and at some profit to themselves. The names of the two companies can be secured from the Bureau of Foreign and Domestic Commerce, Washington.

### CLEANING SEWERS IN HOLLAND, MICH.

By R. B. CHAMPION.\*

The Holland, Mich., Board of Public Works has been using a sewer cleaning machine recently for cleaning some 8-inch and 10-inch sewer, and their experience so far has been as follows:

It requires four men to operate the machine. Generally after the machine is all set up and ready to operate, with the cable in place, the actual time of cleaning 300 feet of sewer, providing time is not lost through having the bucket stuck, is nine hours.

Up to and including August 2nd we have cleaned 14,472 feet of sewer pipe, all of which is 8-inch with the exception of 660 feet of 10-inch pipe. The cost has been as follows:

Cartage .....	\$13.00
Labor (at 30c per hour).....	638.66
Supplies .....	59.86

Total .....\$711.52

This gives an average cost of 4.92 cents per lineal foot. These costs include one piece 307 feet long which was cleaned at a cost of 26 cents per foot, this high cost being because of the necessity of digging up quite a section

of it. A good deal of time was lost on this piece in getting the sewer rods through from one manhole to another on account of the condition of the sewer.

The sewers we cleaned were in all conditions of stoppage, from sections that cost but 0.6 cent per foot to the one above mentioned that cost 26 cents. We find that where no difficulties are encountered in getting the cable through from one manhole to the next and when there are no obstructions which cause the bucket to be stuck, a sewer that is half full of sand can be cleaned with this machine (a Kuhlman sewer cleaning machine) at a cost of 2 cents per foot.

### MUNICIPAL PUBLIC MARKET\*

#### Wholesale, Retail and Farmers' Markets—Advantages and Disadvantages of Each and Extent of Use—Site and Construction.

Public markets may be classified as terminal wholesale markets (of which there are none in this country, but several in Europe); wholesale markets, the object of which is to enable retailers to purchase their stock at convenient times, as quickly as possible, and at reasonable prices; municipal retail markets, and curb or farmers' markets, where the growers of produce can sell directly from their wagons.

*Wholesale Markets.*—It is claimed for wholesale markets that they eliminate (1) unnecessary transportation by retailers and farmers, (2) unnecessary middlemen, (3) high rents, (4) duplication of overhead charges, (5) unnecessary labor, (6) losses through depreciation by delays and rehandling, (7) that they reduce the cost and increase the efficiency of inspection, and (8) permit economic and efficient delivery. Of 154 cities of more than 30,000 population, six reported having wholesale markets, one city having two; while twenty-seven had a total of thirty-six combined wholesale and retail markets. All cities having wholesale markets operate other markets also.

*Retail Markets.*—The advantages of the municipal retail market have been summarized as follows: (1) It should give to patrons, who will pay cash for their purchases and carry them home, a dollar's worth of actual products for a dollar spent. When a buyer does not demand or use credit and delivery service, he should not be charged for it. (2) The prices should also reflect to the consumer the saving which is made possible to the dealer through low rent of his stall and equipment, as well as other reductions in overhead expenses. (3) Patrons should be able to find at the market a larger and fresher assortment of food products than the average private establishment offers. (4) Due to the possibility of close official inspection, the consumer has a right to look for increased protection in quality, weight and measure.

The experience of cities generally seems to be that the greatest field for the successful operation of retail markets is the direct sale to the consumers by producers of perishable goods. It is generally held that retail markets are as a rule more successful in the smaller cities which have a producing area in the vicinity and where the greater part of the food supply does not have to be hauled from any far distant point.

There are some who contend that municipal retail markets have not been able to stand competition with private stores, that they can not be moved easily when neighborhoods change in character, and that in only a

\*Abstract of a report by the State Bureau of Municipal Information of the New York State Conference of Mayors and Other City Officials.

\*Superintendent, Board of Public Works Holland, Mich.



few instances have they brought in an adequate return on the capital invested. It is also claimed that farmers cannot afford time to remain at the market for a large part of the day to sell to consumers, and that consumers in general cannot afford the time necessary to visit the market, because of either household duties or social interests; that only an infinitesimal part of the food supply of a large city can be produced within hauling distance; that the markets can be operated only part of the year; and that the competition of public markets can not have much effect on food prices because consumers are willing to pay for the superior service furnished by retail stores.

In reply to these criticisms it may be said that the experience of a number of American cities that have established retail markets, particularly central markets, seem to refute these arguments. In many of these the farmers do remain to dispose of their goods, the patronage of the consumers is good, they are operated all the year, and they do have an effect on the prices in retail stores.

It was recommended by one city that a retail market should be managed by a well-paid and competent head; that competition should be encouraged by allowing a number of persons to sell all food products not locally produced, but that they should not be allowed to crowd out local producers.

*Curb or farmers' markets* are found in a large number of cities, especially the smaller ones, in several cases operated in connection with a wholesale or retail market, some believing that every retail market should provide space for farmers' and hucksters' wagons. Such a market can be located along the curb of some suitable street or on a vacant lot.

Many cities operating a curb market in connection with a retail market have experienced much difficulty in keeping the professional huckster from crowding out the farmer. In Seattle a farmer, before he can use the market, must furnish the inspector with his name, post office address, description of the property upon which he farms, name of its owner, number of acres, kind of produce he raises, and (if he leases) when his lease expires. He then receives a brass tag from the inspector containing a number corresponding to the number of his record, which tag entitles him to a place in the market and must be shown whenever called for by the inspector.

It is claimed by its advocates that this type of market offers many advantages to a city that is just inaugurating a municipal market policy in that it can be started with little trouble and expense and can be moved easily if the first location is found to be faulty. Its disadvantages are that it affords to the products little or no protection, sanitary or otherwise, does not shelter the seller or his patron from the weather, and affords satisfactory service only during the months of production.

*The market site* is a very important consideration. Poor location has been the cause of many of the failures that have occurred. A terminal or wholesale market should be established where it can be served easily by the railroads, or by boats if there be water transportation.

"The selection of a site for a retail or curb market or a combined wholesale and retail market is more difficult, and the many factors to be considered vary with the size of the city. It is agreed by all that before selecting a site the city should quite definitely decide whether its policy shall be to operate a central market only, or one with several branch markets. Both plans have their advocates and each has been successful in some cities, but in a majority the small public market placed in densely populated residential sections have not

as a rule proved so satisfactory as those which have one or more large ones centrally located in the business section. It is pointed out by many that the reason for the success of the large central market is that the efficiency of the establishment depends upon having the maximum of produce and number of customers meet in one place. G. V. Branch, investor of city marketing for the Federal Government, says that farmers will drive past the small markets in residential centers to sell in the larger markets where their trade is assured and that patrons go to the same places to get the advantage of a larger assortment, and also because they usually have to go to the business district to shop. 'It should be noted, too,' he says, 'that the value of a residential market is more subject to depreciation from shifting population than is that of a market more centrally located.'

"A summary of opinions as to location indicates that large municipal markets should be centrally located; that in small or medium-sized cities which have only one retail market each, it should be as near to the business center as possible and accessible; and that in large cities having more than one retail market, they should be located in the subsidiary business centers. Wherever located, the market, it is agreed, should be within walking distance of as large a tributary population as possible and as near to as many street car lines as is practicable. In selecting a site the possible use of trolley freight service and the provision for expansions to meet future demands should not be overlooked."

*Market Construction.*—"The theoretically perfect market is that equipped with artificial ice plant, artificial heat, abundant light and ventilation, raised counters of glass, marble, tile, soapstone or slate, and provided with refrigerator equipment, floors of non-absorbent material, adequate flushing and drainage, comfort stations, and with the stalls for fish and other sea food segregated. The most popular form of market at present is an enclosed building for the sale of meat, fish, butter and other produce that should be protected, and an open space equipped with sheds for the wagons of farmers and hucksters."

Municipal Journal has described a dozen or more municipal markets during the past few years, in several cases in quite complete detail.

## PAINTS FOR METAL SURFACES\*

**Materials of Basic Nature or Containing Soluble Chromates Prevent Rusting—Leads, Zinc, Carbon, Iron Oxide and Bitumens—Galvanized and Tin Surfaces.**

In designing protective coatings for metal, the modern practice has been to apply the results available from researches into the causes of corrosion. These results have shown that materials of a basic nature or substances which contain soluble chromates prevent the rusting of iron. For this reason pigments of a basic nature or pigments containing the chromate radical have come into use in the manufacture of protective paints. That they are the best has been proved by practice and by test. This article will take up the use of the various pigments under separate headings, considering the paints suitable for use on structural steel, bridges, railroad equipment, ornamental iron work, poles, posts and general work on metal surfaces.

The red lead paints may be purchased in the market ground to a heavy paste in linseed oil, ready to thin for use. One of the most valuable properties of red lead is

\*From a paper by H. A. Gardner before the Affiliated Engineering Societies of Minnesota.

its ability to set up a hard, elastic film that shuts out moisture and gases apt to cause corrosion. This cementing action is due to the presence of unburnt litharge, a pigment which reacts upon linseed oil to form a lead linoleate compound; it will be seen, therefore, that red lead free from litharge has no cementing action and should not be considered more protective than iron oxide or any other similar neutral pigment. It is essential that red lead should be highly basic and should contain a considerable percentage of litharge if the iron is to be protected from corrosion.

It is a growing custom to use prepared red lead paints made from finely ground red lead and linseed oil. These paints remain in excellent condition for a long time, have a high protective value and are well suited for general purposes. They are used extensively for priming steel vessels.

Of the red paints, iron oxide has been one of the most widely used pigments for the manufacture of protective coatings. There are many grades from the brilliant red containing 98 per cent. down to the natural mined brown shale oxides, containing from 30 to 60 per cent. of ferric oxide, the balance being silica, clay, etc. It is customary to add to iron oxide from 10 to 20 per cent. of zinc chromate, zinc oxide or red lead, in order to make them rust inhibitive. These paints are used largely for tin roofs, metal siding and structural steel.

Mixtures of white lead and zinc oxide, tinted gray with carbon black, are widely used and give excellent results. The use of two parts of blue lead and one part of linseed oil containing about 5 per cent. of turpentine drier also makes a useful paint of about the proper consistency. The rust preventive value of this paint is due to the high percentage of lead oxide or litharge. It may be purchased ground to a paste in oil.

Black paints are often preferred for the final coat on steel work. Carbonaceous paints are unsuited for direct application to the metal, and carbon pigments, such as gas carbon black, oil black or graphite are usually used. Magnetic black oxide of iron forms an excellent black protective paint when ground in linseed oil. Willow charcoal is not made in commercial quantity and its use is restricted on this account. Its rust preventive value depends upon the basic nature of the impurities present.

Green paints, formed from mixtures of zinc chromate and Prussian blue in oil, are highly protective and have proved satisfactory in long service tests. Chrome yellow tinted with black oxide of iron to an olive shade is very permanent and protective. Chrome green made from lead chromate and Prussian blue is often used with a barytes base.

Bituminous coatings have a wide use for special purposes. They may be made by blending a refined coal-tar pitch, asphalt, linseed oil and oleo-resinous varnishes, afterward thinning with turpentine or light mineral thinner. A heavy-bodied blown petroleum residual pitch has recently come into wide use. This has high resistance to acids and is not readily acted upon by the sun.

When coal-tar is used in the manufacture of paints it should be refined by heating to about 115° C., until the water is evaporated. From 5 per cent. to 10 per cent. of lime may be stirred in to neutralize the free acids. The addition of Chinese wood oil and asbestine in a coal-tar paint aids in producing a more resistant film.

Bituminous paints of the above composition are used as coatings on pipe lines in acid factories, on metal submerged in water and for similar work. For such purposes it is generally advisable to first coat the metal with a hard drying prime coating made by adding 2 pounds of litharge to a prepared red lead or other protective paint. The bituminous paint may then be applied. Steel mine

structures subjected to sulphur water and gas, reservoir tanks containing water, tunnel metal, etc., may be preserved from corrosion by this method.

Galvanized iron must be painted to be kept from rusting. Paints are apt to peel from it on account of the smooth surface. This condition may be remedied by treating the metal with a solution of copper salts before painting. This may be prepared by dissolving 4 ounces of copper acetate, copper chloride or copper sulphate in a gallon of water and brushing this solution on the galvanized iron.

Tin plate will corrode rapidly unless protected by paint. Before applying paint, the sheets should be rubbed with a cotton rag saturated with turpentine or benzine to remove the oil on the surface. Iron oxide paints are widely used for preserving tin. For dipping purposes, turpentine or mineral spirits should be used for thinning. Cheap driers with a low boiling point benzine should be avoided.

## STATE MOTOR TRUCK LAWS

### Charges Made by Each of the States for Trucks of Various Weights, Powers, Tire Construction, Uses, etc.

There is a complete lack of any standard method of taxation for motor trucks in the various states. Many states make no distinction between pleasure and commercial vehicles; other states have taxed the tonnage capacity. The *Commercial Vehicle* gives the systems and charges for the various states as follows:

- Alabama—Less than 25 hp., \$7.50; 25 to 29 hp., \$12.50; 30 to 39 hp., \$17.50; 40 hp. and over, \$20.
- Arizona—25 hp. and under, \$5; 26 to 40 hp., \$10; over 40 hp., \$15.
- Arkansas—All motor vehicles, \$10.
- California—Equipped with pneumatic tires, same as passenger cars, 40 cents per hp.; others pay additional; less than 2 tons unloaded, \$5; 2 to 3 tons, \$10; 3 to 5 tons, \$15; over 5 tons, \$20.
- Colorado—20 hp. and under, \$2.50; 21 to 40 hp., \$5; 41 hp. and over, \$10.
- Connecticut—One-half ton or less, \$11; 1 ton, \$15, and increasing to \$225 for 10 tons, and \$50 per additional ton.
- Delaware—All cars \$5 each.
- District of Columbia—All vehicles \$2 each.
- Florida—Trucks, 1,000 lb. or less, \$10; 1,000 to 2,000 lb., \$20; 2,000 to 3,000 lb., \$30; 3,000 to 5,000 lb., \$40; over 5,000 lb., \$50.
- Georgia—Not exceeding 1 ton weight, \$2; not exceeding 3 tons, \$4; not exceeding 5 tons, \$5; exceeding 5 tons, \$6.
- Idaho—30 hp. or less, \$15; 31 to 40 hp., \$20; 41 to 50 hp., \$25; over 50 hp., \$40.
- Illinois—May be registered locally. Fees not to exceed \$10 for 35 hp. or less, and \$20 when over 35 hp.
- Indiana—All commercial cars, \$5.
- Iowa—20 hp. or less, \$8; over 20 hp., 40 cents per hp.; all electric and steam cars, \$15 each.
- Kansas—All vehicles, \$5 each.
- Kentucky—Less than 25 hp., \$6; 25 to 50 hp., \$11; 50 hp., \$20.
- Louisiana—All motor trucks, \$7.50 each.
- Maine—Motor trucks, \$10.
- Maryland—Trucks with solid tires and rated capacity of not more than 1 ton, \$8; for each additional ton, \$6; trailers, \$5 each.
- Massachusetts—Trucks under 1 ton, \$5; and \$3 for each additional ton.
- Michigan—Electrics, 50 cents per motor hp. plus 25 cents for each 100 lb. of weight; others, 15 cents per hp. plus 15 cents per 100 lb. of weight.
- Minnesota—All \$1.50.
- Mississippi—4,400 lb. capacity or less, \$8.40; over 4,400 lb., \$16.80.
- Missouri—Less than 12 hp., \$2; 12 to 23 hp., \$3; 24 to 35 hp., \$5; 36 to 47 hp., \$7; 48 to 59 hp., \$8; 60 to 71 hp., \$10; 72 hp. and over, \$12.
- Montana—All \$2 each.
- Nebraska—All \$5 each.
- Nevada—20 hp. or less, \$3; 21 to 40 hp., \$5.50; over 40 hp., \$8.



New Hampshire—15 hp. or less, \$10; 16 to 30 hp., \$15; 31 to 40 hp., \$20; 41 to 50 hp., \$25; 51 to 60 hp., \$30; over 60 \$40.

New Jersey—Unloaded weight 2 tons or less, same as passenger cars; above 2 tons, \$10 in addition to hp. rating; trailers, \$3.

New Mexico—Less than 12 hp., \$2; 12 to 19 hp., \$4; 20 to 29 hp., \$6; 30 to 39 hp., \$8; 40 to 49 hp., \$10; 50 hp. or over, \$12.

New York—\$5 a ton.

North Carolina—25 hp. or less, \$5; 26 to 40 hp., \$7.50; over 40 hp., \$10.

North Dakota—All vehicles \$3 each.

Ohio—Electric vehicles, \$3; all others, \$5.

Oklahoma—50 cents per hp. first year; second, 40 cents per hp.; third, 30 cents per hp.; and thereafter, 20 cents per hp.

Oregon—Electric trucks, \$5; others same as passenger cars, 26 hp. and less, \$3; 27 to 36 hp., \$5; 37 to 40 hp., \$7.50; above 40 hp., \$10.

Pennsylvania—With pneumatic tires, same as passenger cars; others, including load, less than 2 tons, \$5; 2 to 2½ tons, \$10; 2½ to 5 tons, \$15; 5 to 7½ tons, \$20; 7½ to 12 tons, \$25; trailers, including load, less than 5 tons, \$3; 5 to 12 tons, \$5.

Rhode Island—Carrying capacity 1 ton or less, \$7, with \$3 additional for each ton to 4 tons, and then \$4 for each ton above 4 tons; over 9-ton capacity, \$40 each; trailers, \$10 to \$30 each.

South Carolina—All \$1 each.

South Dakota—No registration required.

Tennessee—All motor trucks \$5.

Texas—All 50 cents each.

Utah—\$10.

Vermont—First registration, \$1 per hp.; second, 75 cents per hp.; third registration and thereafter, 50 cents per hp.

Virginia—40 cents per hp.

Washington—Automobiles and buses for hire, 50 cents per hp.; motor trucks under 2 tons capacity, \$10, plus \$5 for each additional ton up to 5 tons; motor trucks for hire, double above rates.

West Virginia—All \$10 each.

Wisconsin—All \$5 each.

Wyoming—Registration not required.

### BRIDGING DRAINAGE DITCHES.\*

The bridging of drainage ditches presents special features to be considered in selecting the type of bridge. Several of these features are especially favorable to the use of reinforced concrete pile substructures.

Bridges over drainage ditches require a relatively greater amount of excavation work to place the footings of reinforced concrete abutments below the bed of the stream than the ordinary bridge and the elimination of practically all excavation work by using concrete pile substructures is especially advantageous with these bridges. Another feature in this work is the necessity for rapid construction, as a number of adjacent highway crossings may be blocked and it is impossible to reroute traffic. When concrete piles are used, they can be molded in advance and driven as soon as the ditch is excavated. The entire substructure may be completed in much shorter time than would be required with the ordinary types of abutments. In some cases the piles may be driven in advance of the construction of the ditch.

A special condition that may be taken advantage of where there are a number of bridges in one locality is that a contract can be let for them in groups, making it economical for the contractor to use a heavy pile driving outfit and eliminate the hand labor excavation work.

The type of pile adopted by the Minnesota Highway Department is 14 inches square with no taper and reinforced with a rod in each corner and with a wire mesh. Enough of these piles are driven in each bent to carry the dead and live load with the piles figured to carry 20 tons

each. A cap is cast which surrounds the tops of the pile and supports the superstructure. The cellular slab type of concrete bridge (described in the June 7 issue of Municipal Journal) is frequently used on this work.

For locations where a removable superstructure is demanded to facilitate later cleaning of the ditch, steel beams can be used and a floor slab cast without bond on their top flanges. The slab is divided into 7 or 8 ft. lengths so that the sections can be skidded off the ends of the beams and the beams removed temporarily.

### HANDLING STONE FOR A SPRINKLING FILTER

#### Details of Plan Adopted at Sewage Disposal Plant at Fort Benjamin Harrison—Force Employed and Amount Placed Daily.

The handling of the stone for a sprinkling filter of a sewage treatment plant is a different problem from the ordinary one of handling broken stone, especially in these days when materials must be purchased far enough in advance to be sure to be on time and so may require storage and an extra handling or two.

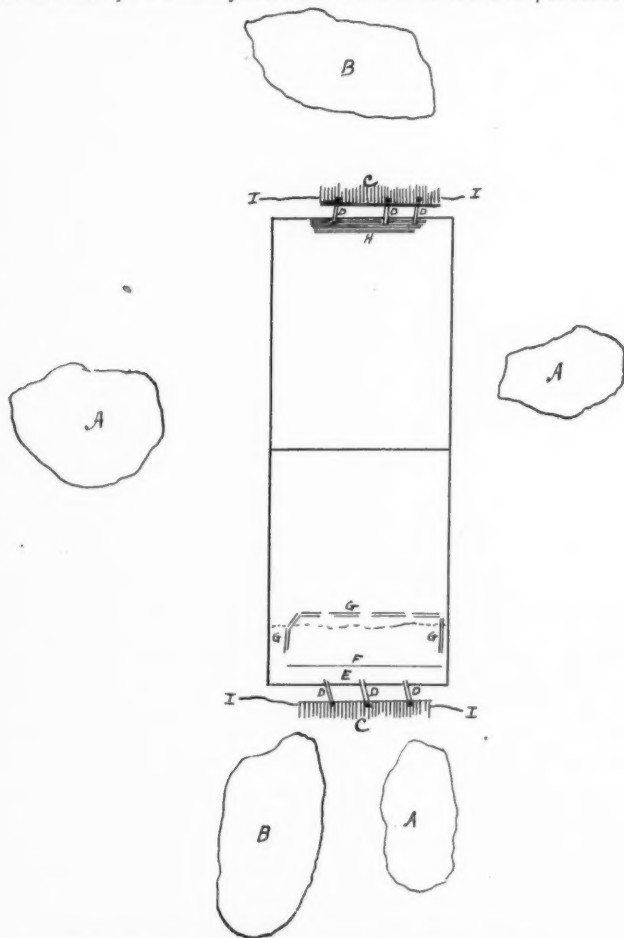
The method of handling stone used by the Gaylord Engineering and Construction Co., under the charge of A. B. Dunning, chief engineer, in the construction of the sewage treatment plant at Fort Benjamin Harrison, near Indianapolis, Ind., is here described to show how the conditions were met and the stone was placed in the filter beds clean and clear and in the two layers required, the lower 2½ feet being of 2 to 4-inch stone and the upper 2½ feet of 1 to 3-inch stone. The company is working under the force-account system and is paid a percentage of profit on the payroll, which is made strictly on Union Labor schedules, so that the company has no control over wages but only on the number of men employed. Indeed, it is often necessary to work with less than the economical number of men on account of the difficulty of securing all the labor desired. A count or two of the number of men employed is given as a means of judging whether there is an excess in the number used.

About 3,000 cu. yd. of stone were required, when allowances are made for losses all the way along the line from quarry to place in bed, the filters being 194 feet long over both beds, 75 feet wide and 5 feet deep. Most of this stone was delivered in hopper-bottom cars, averaging about 50 tons in each car. A small amount came in smaller gondolas out of which the stone was shoveled, but these cars were objectionable because of the difficulty of getting into them, as it required 1 to 1½ hours to get down to the bottom at the ends of the cars before easy shoveling could be done into the wagons alongside. Forks were used largely in handling stone, on account of the necessity of having the stone free from fine material of all sorts. Every handling and the weathering in the storage piles made a certain amount of fine material, so that the fork was used at every handling. This fact and the further facts that the stone consolidates in cars and in piles and the piles sink into soft ground under their own weight produce difficulties in handling which are sometimes not appreciated and make the handling cost more than it is ordinarily estimated in bidding. A good quality of coke-handling fork costing about \$18 or \$19 a dozen does the best work. Forks with ten tines handle either grade of stone satisfactorily, but the fork with eight tines seems to handle the smaller stone, 1 to 3-in., the best.

\*From a paper by C. E. Nagel before the Affiliated Engineering Societies of Minnesota.

Stone delivered in hopper-bottom cars was handled readily. A platform was placed under the car a few inches above the surface and the hopper-bottoms were then dropped. Two or three wagons could be placed alongside each car, three being accommodated easily by the largest cars. With three wagons on each side of a car and two men shoveling into each wagon, a car of stone could be loaded into the wagons quite quickly, such a car holding about 35 wagon loads. The shaking of cars during transportation worked the fine material down into the hoppers so that the first stone taken out was handled with forks and they were used liberally throughout the unloading of the cars. Forty-five teams and 36 men handled 8 to 9 cars a day with forks, making the cost \$1.60 to \$1.80 a cu. yd.

The filter beds are set with the long dimension across the valley in which they are located and there is at each end a small amount of cut into the bank which gives a steep slope down to the beds from an elevation 10 to 15 feet above them. The smaller stone was stored in piles on these elevations. Also as much of the coarse stone as there was room for was stored at one end. The remainder of the coarse stone was stored in two piles as close to the bed as possible down in the valley on each side of the beds, so that it could be wheeled in wheelbarrows to place with as little travel as possible. Grab-buckets could not be used unless screens were installed to take out the fine material and a second handling would have been necessary. The handling with forks into the wheelbarrows, which dumped exactly into place, was therefore preferred.



**LAY-OUT OF STONE DISTRIBUTION PLAN.**  
A-A—Piles of the larger stone. B-B—Piles of the smaller stone. C—Platforms at top of bank. D—Chutes. E—Handling space for stone. F—Runway for barrows loaded by men in E. G—Planks for runways up to and over stone layer for barrows to dump. H—Platform on top of finished filter bed to receive stone from platform above and load on wheelbarrows for distribution over bed. I—Top of bank.

For handling the stone from the storage piles on the hills, platforms were built which gave openings into three chutes, which delivered the stone for the bottom course on the concrete bottom of the bed. In like manner they delivered the smaller stone on a platform on the top of the completed end of the bed. In the former case the wheeling was up hill with an elevation of  $2\frac{1}{2}$  feet and in the latter down hill the same amount. It was found that the stone had consolidated in the piles so that it was difficult to load it into the horse scrapers which were used to carry it to the platform and chutes. Sometimes it was necessary to stir up the surface with a plow before the scraper could be used successfully. Fine material in the stone due to handling and the action of rain water was accused of much of this consolidation, and possibly some of the fine material was due to too much use of the shovel in unloading cars. There is a source of expense in handling here which may be overlooked in estimating. The slope of the chutes can not differ much from the vertical as the large stone does not move easily over plank surfaces.

To reduce the danger of fine stone getting through the platform on to the filter bed, the smaller stone is forked from the pile into wheelbarrows to carry to the chutes, instead of using the horse scrapers. The stone is again forked into barrows at the bottom of the chutes, but there is less fine stuff to get rid of.

All the stone delivered at the bottom of the chutes was forked into several piles arranged in a row across the end of the bed. The fine material remaining was wasted as filling behind the concrete wall at the end and side of the bed.

To carry the stone from the small piles to place in the bed, a row of 14 or 15 men was kept moving constantly along a lane past the piles, up an incline to the top of the layer of stone, along a plank runway to place of dumping designated by one man in charge. From 9 to 14 men stood at the small piles and each dumped a forkful of stone into a barrow as it went by. Not every man forked into every barrow, but by the time a barrow man had passed the lane he had about a half-barrow of stone, about all he could handle easily and dump properly. One man spread what little amount was necessary to keep the surface of the stone level and to grade.

The day shift includes 5 scrapers; 14 forkers and shovellers on platform and down chutes; 17 men at bottom of chutes, forking, wasting fine material and loading barrows; 14 barrows; 1 unloader; 1 spreader; foreman, and water boy.

An exact measure of the work done was furnished by Mr. Dunning. The night shift, working 10 hours regular pay, consisted of 32 men, 1 foreman, and 2 scrapers. The amount of stone placed was  $73 \times 30 \times 2\frac{1}{2}$  ft. or 203 cu. yd. As 14 barrows were used and 9 men loaded them, most of the difference from the day force was on the storage pile and at the bottom of the chutes. Teams cost 80 cents an hour and labor 35 cents, so that the cost of the 203 yards was \$133 or  $65\frac{1}{2}$  cents a cu. yd. The night shift probably handled more stone per man than the day shift.

#### MINNESOTA ROAD PLANER.

An appliance developed from the King road drag is being used in the central states for gravel and dirt road construction and maintenance, which is said to be less liable to gouge out soft places and, with its side supports of comparatively great length, fills up depressions in the surface without any special effort on the part of the driver. They are built 5 ft. wide and 12 ft. long, 2-inch timbers being used throughout. The blades are shod with metal. It is used in many counties to spread dumped gravel evenly over the road.



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## THE COST OF PUBLIC WORK.

Several times since the United States entered into the war we have expressed our opinion that cities, counties and states should continue to carry on public works as usual, at least such as are necessary to maintain and increase the health of the people and the efficiency of their various enterprises as compared with those that are largely ornamental. It can hardly be expected that the cost of such work will not be greater than in previous years, but on the other hand such cost does not seem to have advanced by so high a percentage as that of many or most other materials and services; in other words, public work is being done at relatively low cost.

An especially favorable report in this respect is received from Utah. It was stated recently, in connection with a discussion on the advisability of building certain roads this year in that state, that "never before in the history of the state has road construction been done so cheaply as it is at present. The Beck street road in North Salt Lake is being built for less money than any other concrete road ever constructed in the state. An asphalt contract let in Ogden recently broke the low cost price record for that kind of construction." While such favorable conditions can not be expected everywhere, this and other instances of low costs would indicate that many officials probably are being unnecessarily deterred from putting through public work by a fear that the cost will be excessive.

For those who are holding off in the hope that lower prices may be obtained in a few months, there is little encouragement for believing that such hopes will be realized. Prices of some materials that are now exor-

bitant will probably be lowered, but the general average can hardly be expected to fall at all before the end of the war, and may rise; and even after the conclusion of hostilities, a world-wide demand for materials and skilled labor will probably continue for at least a year or two which will tend to maintain the cost of these well above the level of antebellum conditions.

## COMPETITION FOR PUBLIC WORK.

Not for years, probably, have Americans, as a nation of individuals, been so economical as during the past few months. This does not mean that they have been depriving themselves of necessities, but that they have purchased more carefully and been less wasteful.

Municipal governments should follow suit. Officials should take more pains to obtain the best prices possible without sacrificing quality, and to make sure that they are getting what is most suitable to their needs. This will require a little more consideration and attention to details on their part, but it is their duty as public servants to contribute these. It may necessitate withholding orders or contracts from personal or political friends if others can be found who will give the city more favorable prices, but this is their duty now more than ever.

To obtain the lowest possible prices involves securing offers from all who are willing to furnish the desired goods or service; and in almost every case this requires that public invitation for bids be brought to the attention of all probable bidders. More and more cities are doing this instead of merely notifying a list of local contractors, and they are finding that the cost of such advertising is insignificant compared to the saving in the cost of the work secured by the wider competition. This is especially true at present, when so many are apparently boosting prices because of personal greed rather than of any business necessity.

Public work can still be done at reasonable prices, but not all prices now being asked are reasonable, and those that are not should be forced out of the running by wider publicity and competition.

## WHERE MUNICIPAL OWNERSHIP IS A FAILURE.

A request for information concerning a waterworks plant in a small city brought us the following reply: "Records have not been kept for a good many years. There is no record of the number of miles, rods or feet of pipe, the sizes, connections, gates, etc. Over one hundred meters are out of fix and not running. Meters have never been examined since the first one was put in, unless one got broken by freezing or some accident. There is talk of combining the offices of water commissioner and chief of police at a salary of \$25 a month."

Decision as to whether or not municipal ownership is a success is generally made largely from a business viewpoint, and any business run in the way indicated by the above reply could not be expected to succeed. If a municipality is not prepared to give to the operation of a public utility, and especially one that involves the health as well as convenience and pocketbooks of its citizens, at least as much intelligent attention as is required to run a corner grocery successfully, then it had better let municipal ownership alone and make the best terms it can with a private corporation to provide the public necessities and conveniences.

Municipal ownership is foredoomed to failure when it is neglected and mismanaged; but almost any city can make it a success if it will run it on sound business principles.

## PERMANENT ASSESSMENT BOARDS

### To Act in Street Opening and Widening Cases—Laws and Practices in Eight Large Cities—Law Proposed for St. Louis.

By ANDREW LINN BOSTWICK.\*

The City Plan Commission of St. Louis has completed plans for an improved system of major, or principal, thoroughfares for the city. This plan has already been described in Municipal Journal.

It was found that state legislation on a number of points will greatly facilitate the carrying out of this street plan, and every effort will be made to obtain the powers desired.

One of the city's needs in this respect is a permanent assessment board to act in all condemnation cases, particularly in opening and widening streets. At present, three commissioners in each case are appointed by the courts. A permanent board of experts, high-salaried if necessary, would be a powerful factor in the prompt disposal of all condemnation suits.

The Commission made a brief study of existing laws and practices, and a summary of this, together with the text of a proposed law on the subject for St. Louis, is given herewith:

Philadelphia—(Act of Assembly, June 23, 1911.)—Board of Viewers of 9 members, appointed by Court of Common Pleas for 3-year terms. Salary, \$5,000. Upon petition the court appoints a "Board of View," consisting of 3 members, from the Board of Viewers, one of whom must be learned in the law, to assess benefits and damages and report thereon.

Boston—(Municipal Register, 1915.)—Board of Street Commissioners consists of three members appointed by the Mayor. One duty imposed upon the Board is the assessment of benefits and damages.

Baltimore—(Charter 1915, part of Secs. 172-195A.)—The Commissioners for Opening Streets, three in number, are appointed by the Mayor. They must assess benefits and damages. Appeal may be had to the city court.

Milwaukee—(Charter, 1914, Ch. VI.)—The courts appoint a jury to report on the necessity of taking property, but the Board of Public Works assesses the benefits and damages. In *Andrews vs. Oshkosh*, 84 Wis. 566, it was held that the board of public works of a city, acting under oath, was a fair and impartial tribunal to assess benefits and damages. Appeal may be had to the Circuit Court.

New Haven, Conn.—(Charter, Secs. 76-81, part.)—The Department of Public Works has a Bureau of Compensation, at the head of which is a Board of 3 commissioners, bi-partisan, appointed by the Mayor for 3-year terms (over-lapping) at salaries not exceeding \$300 per year.

The Bureau of Compensation holds hearings in street opening cases, assesses benefits and damages, and reports to the Board of Aldermen, which body may make revisions.

Oakland, Cal.—(Charter, 1910, Sec. 51, 47.)—In street opening proceedings the city attorney and the street commissioners direct the work usually performed by special commissioners in assessing benefits and damages.

San Francisco, Cal.—The Board of Public Works assesses benefits and damages in street opening and street widening cases.

St. Paul.—The Board of Public Works assesses benefits and damages in street opening and street widening cases.

St. Louis, Mo.—(Proposed Law.)—An Act Granting Authority to Any City in This State Now Having or Which May Hereafter Have 400,000 Inhabitants, to Provide by Ordinance or Charter Provisions for the Appointment, Term of Office and Removal of a Board of Assessment Commissioners Who Shall Have the Power to Assess Benefits and Damages in Condemnation Proceedings.

Be It Enacted by the Senate and General Assembly of the State of Missouri, as follows:

Section 1. Full power and authority are hereby given and conferred upon every city of this State which now has or may hereafter have 400,000 inhabitants to provide for the appointment, term of office and removal of a Board of Assessment Commissioners, who shall constitute a permanent board for the assessment of benefits and damages in condemnation proceedings instituted by any such city; and such provision may be made either by charter

provision therefor adopted by the people of said city, according to the law, or by the people thereof under the power of the initiative.

Sec. 2. It shall be a feature of all such laws or ordinances that said Board of Assessment Commissioners shall be a permanent board who shall sit from day to day and assess benefits and damages in condemnation proceedings as may be provided by said city as aforesaid.

Sec. 3. Said city shall have power by ordinance or charter provision to fix the number of said commissioners constituting said board, their terms of office and the manner of their appointment, and the manner in which they shall discharge their duties.

### TOPOGRAPHIC MAP FOR BEVERLY.

In presenting a report recently to the Planning Board of the city of Beverly, Mass., A. C. Comey laid emphasis upon the desirability of a proper topographic map of the city. Such a map had been prepared on a scale of 800 ft. to an inch by the city engineer from existing maps, but this was not believed to be sufficiently accurate and it was recommended that a precise survey of the city be made as a basis for a new map. It was recommended that the system of coordinates be used for locating points within the city, the axes passing through the extreme western and southern points of the city's boundary.

The map would probably be drawn to as small a scale as 200 ft. to an inch, but enlargements could be made for special purposes when necessary. To permit filing flat in drawers, it should be divided into sheets not exceeding 3 by 4 ft. over all, including a margin and slight overlap of each sheet. As all the topographic data will not be necessary for each of the purposes for which the map will be used, a tracing should be made of the original map showing simply the coordinates, boundaries, shore lines, railroad center lines, street lines, and boundaries of city property.

From such a tracing an assessor's map could be prepared, on which would be placed all property and lot lines, building lines and other easements and restrictions. Each block and each lot could be numbered and the map kept up to date by reference to the recording of deeds.

In the congested areas it may be found necessary to enlarge these maps photographically to a scale of 100 or even 50 ft. to an inch. Other departments may desire to use such outline maps for indicating location of water and sewer pipes, types of pavements, location of poles and wires, etc.

The complete topographic map should include levels and grades, contours at 5-ft. or 2-ft. intervals, fences, buildings, railroad and street car tracks, curbs, parkings, monuments, and the character and treatment of public property and other large tracts (roads, paths, fences, water-ways, swamps, rocks, large trees, woods, etc.). These should be kept up to date by occasional field work. Rural sections not likely to be built upon need not have all this information mapped in advance of need for it.

All construction plans on a large scale should be based on this map and enlargements from it, which need only be corrected when actual work is to be done. For general city-wide studies, a reduced copy should be made at a scale preferably of 1,000 ft. to an inch. For clearness, many of the data may be omitted, but public buildings and contours at 5 or 10-ft. intervals should be shown.

In the report of which the recommendation above abstracted formed a part, Mr. Comey also submitted a map showing the public and private uses to which the city's area is put; another showing the distribution of population over the city; and a third showing the variation in assessed land values.

\*Secretary, City Plan Commission, St. Louis, Mo.



## The WEEK'S NEWS

State Highway Developments in California, Pennsylvania and Texas—California's New Sanitary Laws—United States Makes Cantonments Safe for Soldiers and Citizens—New Jersey River Pollution Suits—San Francisco's Water Rate Case—Voters Won't Lower Gas Rate in Cincinnati—No Higher Rates for Missouri Utilities—Police in East St. Louis Found Responsible—Fires in Sumpter, Ore., Lebanon, Ill., and New York City—Lansing's Piggery—Garbage Collection in New York, Pocatello and Flint—Strikes Tie Up Cars in Kansas City, Butte and Lima.

### ROADS AND PAVEMENTS

#### Prohibit Traction Engines on Paved Streets.

Springfield, O.—A fine of not less than \$25 nor more than \$100, is the penalty fixed by an ordinance passed by the city commission for running a traction engine, road-roller, or any other heavy vehicle or machinery having cleats, spikes, or like projections on the wheels over the paved streets or street crossings of the city. Before any such vehicle or machinery is moved over any part of a paved street or street crossing, application must be made to the city manager for a permit which will be issued when the case so warrants. This permit shall specify the route over which the vehicle must pass and the method of protection which shall be used over which the cleated or spiked wheels pass. The ordinance is so worded that it will probably include all heavy machinery regardless of the kind of wheels.

#### Counties Get Vehicle Receipts.

Sacramento, Cal.—The sum of \$1,187,497.62 will be distributed to the counties of California as their share of the receipts from the registration of motor vehicles for the six months ending the first of July, according to H. A. French, superintendent of the state motor vehicle department. The total receipts were \$2,554,817.65, the net receipts \$2,521,355.60, and the counties' pro rata of expenses, \$146,360.37. Los Angeles, with 78,143 autos and 7,501 motorcycles registered, gets the largest share, \$374,061.80, with San Francisco second with 25,917 autos and 1,692 motorcycles and a cut of \$132,794.64. Sacramento's share was \$31,958.45. The same department has prepared a statement showing the registration of motor vehicle dealers for the state. It shows there were 250,660 autos in the state on July 1, 23,863 motorcycles, 11,213 chauffeurs, 2,149 auto dealers and 153 motorcycle dealers.

#### Highway Commissioner Ousted.

Harrisburg, Pa.—Frank B. Black, state highway commissioner, has "resigned" at the request of governor Brumbaugh. Action by the governor in asking for Black's resignation followed the publication of details of the censorship placed upon a proposed statement of the highway department regarding an equitable division of the state funds for county road work. The governor demanded a look at the proposed statement, then withheld it from publication. The commissioner made it public when he resigned, stating that the public may be the judge whether he is right or wrong. In his letter of resignation, commissioner Black says: "The reasons as set forth in your letter, especially those pertaining to the manner of oiling roads, are so ridiculously small and insignificant that they are not worthy of a reply. The policy of the department as to the distribution of its funds has been announced from time to time, as you know, and is well known to the public, that policy being that the money would be divided equitably and that each county would get its just proportion. I gather from your letter that you do not desire to treat the counties fairly and evidently wish the money parceled out to favorites. The fact that many counties have offered to meet the state on a 'fifty-fifty' basis in the construction of state highway routes is an indication that the state highway department has the confidence of the public, and if the money appropriated is to be used for political purposes it will subject the department to endless criticism and will be a crime for which you and your political advisors will have to answer. Since I have been in office there has

been no mystery with the highway department and its work has been known to you as well as to the public generally. The way I look at this proposition is that all the statements made by you are made with a view of beclouding the real issue for requesting my resignation. It has been my aim to run the department along business lines instead of being used as a political asset. I have refused consistently as is well known both to yourself and your close political associates, to turn the department into a political machine. At your own personal order, contrary to the judgment and advice of the department, I appointed four superintendents whose appointments were insisted upon by you solely for political reasons, to take the place of men of experience, and in each case these appointees very soon realized their inability to handle the work and resigned voluntarily, which simply illustrates what it would mean if the work of the department were handled along political lines. Continuous efforts have been made during my administration to force changes and removals for political reasons, the practice of which I could not countenance. Such methods tend to completely demoralize any organization, cannot help but cause financial loss in handling work, because of constantly changing ineffective and inefficient personnel, and in this way the department must lose the confidence of the taxpaying public."

#### Honolulu Wants to Be on Lincoln Highway.

Detroit, Mich.—The latest and most unique claim for a place on the trans-continental highway comes from far Hawaii where local enthusiasts now announce Honolulu as being the western terminus of the Lincoln Highway rather than San Francisco. Not the Golden Gate, but the famous Nuuanu Pali, six miles above Honolulu, a precipice overlooking one side of the Island and considered one of the most spectacular views in the world is advanced as being the western goal of America's transcontinental motorists, and it is true that hundreds finishing their transcontinental drive now embark for the Hawaiian Islands, there to complete their season's tour. Ambitious Hawaiians now aspire to make their home a terminus for other great automobile routes and a party from Honolulu headed by E. H. Lewis, pioneer automobilist of the Hawaiian Islands has just landed at Seattle to log the road from that point to San Francisco, and from San Francisco to drive on Lincoln Highway to Chicago, where they expect to arrive late in August. The cars will be decorated with Hawaiian pennants and Mr. Lewis and the other prominent Hawaiians will carry letters from mayor Lane of Honolulu to the mayors of San Francisco, Chicago, New York, and intermediate cities along the Lincoln Highway.

#### Half Auto Fees to Counties.

Austin, Tex.—The attorney general's department has rendered an opinion to the state highway department that the one-half of the registration fees remitted by the highway department to the respective counties is to be expended by the counties upon highways of the counties, after the submission to and approval by the state highway commission of the plans of the contemplated expenditures. To the commissioners' courts of the various counties is given the direction and control of the expenditures of the fund, but in such expenditure they are limited by the further provision of the act, that the same must be upon plans approved by the highway department. "Any other interpretation of this section of the act would be to defeat the general scheme and purpose of the same, to wit: A

co-ordinated system of highways, together with the local or market roads leading thereto," says the opinion. "This allotment from the state highway department does not become a part of the general county road and bridge fund, but remains as a special fund, to be expended in the manner set out by the act creating same. When the commissioners' court desires to make an expenditure from this fund they should designate the roads, the character of maintenance desired and submit the plans in detail to the state highway department and upon their approval or disapproval would depend the right of the commissioners' court to proceed with the work."

## SEWERAGE AND SANITATION

### Control of Health Board Budgets.

Columbus, O.—"Estimates of expenses for local health officers and boards of health are subject to review by the county budget commissioners and may be reduced as well as other items in the budget when this is necessary to bring the total for any taxing district within the limits provided by law. The council of a municipality must appropriate funds sufficient to pay compensation fixed by the board of health for its employees provided there are funds from which such appropriation can be made." These summarize an opinion given to the state department of health by attorney general Joseph McGhee in response to the following questions asked him: "1. What, if any authority has a municipal or county budget commission to reduce the estimates submitted by a board of health—including compensation for employees and other administrative expense? 2. Is there any procedure whereby council can be compelled to appropriate a sum sufficient to pay the compensation fixed by a board of health for its employees without compelling the individual employee to maintain an action in mandamus?" As authority for the first proposition the attorney general cites the case of *State ex rel Patterson*, 93 O. S., 25, in which it is held that the budget commissioners may adjust the various amounts of taxes to be raised and may reduce any or all items in such budget and, in the absence of fraud, bad faith or abuse of discretion, it is not within the power of the court to interfere or control the discretion or judgment of such budget commissioners. As to the second proposition the case of *State ex rel Miller v. Council of Massillon*, 20 C. C. (n. s.) 167, is cited in which case the court held that it is mandatory upon council to make the necessary appropriation to meet the expenses of a health officer and a board of health, and that mandamus will lie to compel an appropriation for such salary and expenses under the provisions of Section 4451 G. C.

### New Sanitary Laws in California.

Sacramento, Cal.—Important new health laws affecting hotels, rooming houses, restaurants, saloons, soda fountains, bath houses and other public places are now in effect. The new provisions, which were passed by the last legislature, are known as follows: Senate bill No. 92, preventing the keeping of towels for common use in public places; senate bill No. 640, providing for the sanitary regulation of hotels; senate bill No. 91, to prevent the common use of drinking cups in public places; assembly bill No. 141, providing for the healthfulness, cleanliness and safety of swimming pools and bath houses. Penalties are prescribed for the violation of any of these acts. The law dealing with the common use of towels sets forth substantially that any hotel, restaurant, factory, barber shop, office building, school, railway station, etc., maintaining towels for the use of more than one person without being washed or sterilized after each consecutive operation, will be guilty of a misdemeanor and be liable to a fine not exceeding \$25 for each offense. What is known as the "bed sheet act" deals with the sanitary condition of hotels, requiring clean bed coverings, the rooms to be well ventilated and kept clean, the sheets at least 81 inches by 91 inches for full beds and at least 50 inches for single. Any owner, manager or lessee who fails to comply with this act will, on conviction, be fined not more than \$200, or imprisoned for not more than three months. Any person who violates the provisions of the public "dr. k-

ing cup" act will be guilty of a misdemeanor and be liable to a fine of not more than \$25. This act makes it unlawful for any person, firm or corporation who conducts a hotel, saloon, soda fountain, store, theatre, church, club, train, etc., to allow to be used in common any receptacle for drinking purposes without its being thoroughly washed after each use. This law further makes it compulsory for a cask, water cooler or any vessel used for storing or supplying drinking water to be covered or protected to keep people from dipping out the water. Concerning the bill dealing with swimming pools and public bath houses, and which regulates the granting and revocation of permits and the inspection of these places, it is specified that no person may construct and operate a bathing place without obtaining an unrevoked permit from the state board of health. It also provides specific means whereby a permit may be alone acquired, if at all, through the submission of plans and specifications to the board with the accompanying application. Every detail that assists in making a bath house or swimming pool sanitary and safe must be gone into. For a violation of this act the penalty is not less than \$25 and not over \$500 or six months' imprisonment, or both. The state board of health is proceeding with the enforcement of these health laws and has directed all local health officials to get into immediate touch with the persons, firms and institutions affected and to apprise them of the requirements and changes necessary in order to comply with the new regulations.

### Health Protection in Cantonment Cities.

Washington, D. C.—Col. H. C. Fisher, of the Surgeon General's Office, has been making a tour of sanitary inspection of the cantonments in the southeastern department, including the states of North Carolina, South Carolina, Georgia, Alabama, Mississippi, Tennessee, Louisiana and Arkansas. The Surgeon General plans to have general sanitary inspectors connected with his office make careful inspections of all cantonments in order that he may know at first hand the actual conditions and take timely steps to remedy any defects in sanitation.

Columbia, S. C.—Sanitary units, under the supervision and authority of the state board of health, will be established at the three South Carolina military camps—Jackson, at Columbia; Sevier, at Greenville, and Wadsworth, at Spartanburg—according to Dr. J. Adams Hayne, state health officer. Appropriations for the maintenance and prosecution of the work will be made by the American Red Cross. The amount for the work at Camp Jackson—\$10,000—has already been appropriated and a check for it received by Dr. C. Gadsden Guignard of Columbia, who has been designated as business agent for the disbursing of the fund. "The state board of health's funds, as well as the county funds, are appropriated by the legislature for specific purposes," stated Dr. Hayne. It was therefore necessary to get funds from some other source. These funds were secured from the American Red Cross. The general plan as outlined by the United States public health service and the American Red Cross is the establishment of thorough and effective sanitary control systems around army cantonments and other military points. This will be done by making a preliminary survey to determine the existing conditions and what additional measures and organization will be necessary to establish sanitary control. Units will be established in these zones to consist of one bacteriologist, one chief sanitary inspector, from two to six public health nurses, from two to six sanitary nurses, necessary laboratory attendants and clerks and such other additional personnel as may be necessary to meet any special need which may arise. "The plan agreed upon by the United States public health service and the American Red Cross," continued Dr. Hayne, "was that a department camp environment sanitation of the state board of health should be formed, with an officer of the United States public health service in charge, who would be under the direction of the state board of health and clothed with its authority, and that other officers should be detailed at the camps at Greenville and Spartanburg to be in charge of the units stationed there." Around the Columbia cantonment will be created a one mile zone free from the mosquito carrier of malaria.

Rockford, Ill.—Medical authorities of Camp Grant at



Rockford have ruled that temporary ice cream and pop stands and hurry up restaurants must go and that a health zone of several miles around the camp will be established. They are doing this as a precautionary measure to insure the health of soldiers and the same steps are likely to be taken soon by Camp Custer, Battle Creek, Mich., authorities.

Houston, Tex.—Outlining a clean-up campaign, city health officer P. H. Scardino said: "The overnight increase of Houston's population by 35,000—a city in itself—requires prompt and vigorous steps to safeguard the public health. We have been very diligent in the past, but redoubled efforts will be required. The big thing is in guarding against a possible spread of typhoid fever and the keeping down of malaria. When 35,000 men are quartered together, a few scattered cases of typhoid may spread to an alarming degree—and that is just what the army is going to keep down. But the army's jurisdiction ends at Camp Logan's borders, and it will be our work to have the surrounding community clean, and to see that milk and food supplies are absolutely clean. If the fall and winter are comparatively dry, the keeping down of malaria will be greatly simplified. The health department will have a morbidity map, with pins of different colors to define the location and character of different reportable diseases. We can thus keep the city divided into zones." A preliminary health survey was made by Dr. A. W. Freeman of the United States health service, assisted by J. K. Hoskins, a water and sewage expert. Many new inspectors have been added to the regular city force. The city and army authorities will require that all surface toilets in the city be either connected with the sanitary sewerage system or be made flyproof. Standardized plans, calling for a cheap but effective type of construction, will be furnished by the health office. In addition, the city will require the draining of back yards to remove breeding places for flies and mosquitoes. And the inspection of milk will be very rigid. The health officer will ask the council for authority to buy a motorcycle for one of the two inspectors, and will keep these experts continually on a round of the dairies supplying both the troops and civilian trade.

Hattiesburg, Miss.—Following meetings of citizens addressed by Dr. J. A. Watkins and J. A. LePrince, of the United States public health service, and Dr. W. S. Leathers, director of health of Mississippi, the community has been aroused to an aggressive clean-up campaign. City commissioners and county supervisors are endorsing the movement and providing funds. Work is now well under way. Commissioner L. C. McAuley put a large force of men to work to clean and drain Gordon Creek. Passed assistant surgeon J. A. Watkins directed the work of the men. J. A. LePrince, the malaria expert, started work on the mosquito breeding places. Dr. Watkins was made director of public health for the civil district and the extra cantonment area. This title was given him by Dr. W. S. Leathers, state health officer, Dr. H. T. Mounger, county and city health officer, and the general welfare committee of the county. The work of ditching and draining will be extended to cover the entire city and county. Oiling machinery was ordered by telegraph and put to use immediately on arrival. The city authorities have passed an ordinance requiring all owners of places of business to put wooden or galvanized iron boxes in the rear of their places of business for the collection of all trash, paper, decayed fruit or vegetables. The ordinance defines the dimensions of the containers and orders they must be properly covered. Violations of the ordinance will result in prosecution. Fines ranging from \$1 to \$10 may be imposed. The installation of a system of garbage collection in Hattiesburg was then announced by Dr. J. A. Watkins. Twenty inspectors were engaged in a house to house canvass of Hattiesburg, indexing the health conditions found in each family. After six hundred cards were turned in to Dr. Watkins, he said: "These cards show an astounding lack of sanitation in the homes of Hattiesburg. We thought the clean-up would be municipal, rather than individual. I find, however, that in 90 per cent. of the homes visited by the inspectors, radical improvements must be made. It seems as though our work will have to be extended to many private kitchens in Hattiesburg." According to the cards on file in Dr. Watkins' office, the majority of the homes inspected

lacked garbage cans. The cards show that a large number of surface closets are not screened. Many houses were also found to be inadequately screened against flies and mosquitoes. Dr. Watkins personally inspected every restaurant and cafe in Hattiesburg. He informed the managers of most of the establishments what changes must be made to protect the health of the public. In some instances these changes will involve considerable expense. All eating houses in Hattiesburg will be inspected daily. All state and city health ordinances will be rigidly enforced. Others will be promulgated as the occasion arises.

#### Begin on Last Passaic Valley Sewer Section.

Newark, N. J.—After a long delay caused by the abandonment of a contract, work on the last big link in the Passaic Valley sewer has been started by Charles S. Haskin of Boston, who was recently awarded the contract to complete the outfall pressure tunnel under Jersey City and New York Bay, originally undertaken by the O'Rourke Engineering Construction Company of New York. Haskin, it is expected, will complete the work before December 31. Part of the equipment left by the O'Rourke company at the Jersey City shaft has been purchased by Haskin, and it is understood that negotiations are under way whereby all available machinery and a dock left by O'Rourke will be taken over by the new contractor. Haskin's first work was at the Jersey City shaft, where he installed steam boilers to supply his own power for air pressure work required in driving the tunnel. At a recent meeting the sewer commission raised the salaries of twenty-one of its employees, none of whom had received an increase in the last two years. The raises total \$6,280 a year.

## WATER SUPPLY

#### Continue Diversion and Pollution Suits.

Trenton, N. J.—Answers have been filed in the Court of Chancery by Jersey City and the East Jersey, Acquackonk and Montclair Water companies to the suit brought by the National Silk Dyeing Company to enjoin these and other defendants, including Newark, from impounding and interfering with the flow of the Passaic River and its tributaries. The answers denied a number of the allegations made by the dyeing company. Assertion is made in the answer that the property rights of the defendants rather than those of the dyeing company have been impaired by the discharge of noxious sewage, chemicals and discoloring polluted matter into the river by the dyeing company. The answer sets forth that notwithstanding the diversion and impounding of water complained of, there has always been a sufficient flow of water past the dyeing company's works for reasonable riparian uses. The fact that the dyeing company ceased to take water from the Passaic some years ago was not, it is charged, because of insufficient water available for its purposes, but because the water had become unfit for use through pollution caused by Paterson and other dyers and manufacturers along the banks of the river. An answer filed by the law department of Newark in the chancery action brought by the Weidmann Silk Dyeing Company of Paterson, to enjoin the alleged unlawful diversion of water from the Passaic River, sets out these major reasons why the relief sought should not be granted:

That it was a matter of common knowledge in Paterson and elsewhere prior to and during the construction of Newark's present water supply system that as a result of the taking of water from the Pequannock watershed the flow of the Passaic would necessarily be substantially diminished; that the complainant concern with full knowledge of that fact "stood mutely by," permitting Newark to expend the large sum of \$6,000,000 in the erection of its works, and hence it is estopped from now obtaining an injunction against this defendant, if any it has under the circumstances.

That the complainant company is one of a number of dyeing concerns in Paterson which are jointly polluting the Passaic River by discharging their sewage and chemical waste into that stream; that if it were not for that pollution, the cities of Newark, Jersey City, Paterson and Passaic and the various other municipalities that use the water diverted from the river could use that water and yet leave sufficient water in the river for all the legitimate uses of the dye houses and other riparian owners below the points of diversion. Newark submits, under these circumstances, that complainant does not come into court "with clean hands and should be denied any equitable relief on that account."

Lastly, the answer sets out that the Passaic River and its tributaries above Little Falls constitute the only available source from which water in sufficient quantities can be taken for the cities and towns of Northern New Jersey and that the supply is more than adequate, not only for the present, but for all future needs within the bounds of reasonable forecast, provided the waters are properly impounded and protected from pollution; that all the water now taken by Newark is taken under legislative authority for public use of an imperative character.

The answer denies that the undiminished flow of the Passaic at complainant's plant is a large or anything but an insignificant element of value in the plant; that the diminished flow due to the diversion complained of has greatly or appreciably diminished the value of the plant; that the natural flow of the river, but for the impounding, interruption and diversion, would have carried away the noxious material deposited in the river, and that such diversion, if continued, would greatly lessen the value of complainant's premises for any use to which they might be put.

The bringing of the chancery action by the Weidmann company is a new departure on the part of that concern, following a set-back it received in a common law action at the hands of the Court of Errors. In a number of suits brought by the Weidmann concern and other Paterson dyeing companies sizable awards were recovered against this city, some of which were ultimately cut down, however. When Harry Kalisch became city attorney January 1, 1915, he found a number of such suits brought by the Weidmann company and other dyers against Newark and other takers of water from tributaries of the Passaic pending, and took steps to combine them all. The case was then tried before Judge Silzer in the Passaic Circuit and resulted in an award against several of the defendants, the court having eliminated from the consideration of the jury the diversions by the Passaic Water Company and the Morris Canal & Banking Company on account of their alleged prescriptive rights, and also the pollution of the river by Paterson and various other polluters. In that suit Mr. Kalisch raised the point that inasmuch as the Weidmann concern returned the water it took from the river after its use in a polluted state, the diversion complained of by that company did not constitute an "interference with its reasonable use of the water," and he asked that the jury be so charged. This request was denied, but the Court of Errors differed, holding, in an opinion by Justice Bergen, that the question raised was not one of law, but one of fact that should have gone to the jury.

#### Company Wins Steps Toward \$2,000,000 Claim.

San Francisco, Cal.—Special master in chancery Harry M. Wright who had been hearing evidence in litigation between the city of San Francisco and the Spring Valley Water company, involving \$2,250,000 impounded funds, has recommended that the company have possession of the money, in a report to the United States district court. The money represents the difference between the company's rates and those fixed annually by the municipal board of supervisors between 1907 and 1915. Special master Wright, in his report, contended the company's rates were just, and those fixed by the supervisors were confiscatory. His decision must be ratified by the court. The company claimed that "the rates were fixed arbitrarily and at random, or by guesswork, and were not based on the actual value of the property, but upon the mere whim of the Board of Supervisors." The city and county attorney will challenge the company's violation by claiming that it is greatly excessive, particularly as regards "going concern" value.

#### State Laboratory Tests of Water Supplies.

Charleston, W. Va.—Tests made in the state university hygienic laboratory at Morgantown by authority of the public service commission, covering the water supplies of 117 cities and towns of West Virginia show nine places having water that was found absolutely unsafe, and eleven places where the water is pronounced safe, according to the report made by chief inspector A. A. Shepherd, covering a period of one year ending June 30 last. The samples tested were taken from sources of supply, reservoirs, tanks, taps and wells, not from taps alone. The towns having water pronounced unsafe are Cairo, on Cabin Creek, Eskdale, Ethel, Gauley, Hundred, Ripley, Shepherdstown, West Union and Worthington. Water in use at Bluefield, Berwind, Ceredo (second utility), Follansbee, Gary, Harrisville,

Leewood, Mt. Hope, Raleigh, Northfork and Widner is given a clean bill as pure and safe.

The report shows that out of 51 tests made of Charleston water from 14 shipments of samples, 27 were found safe, 12 unsafe and 12 suspicious, a total of 23.5 per cent unsafe; Huntington, 38 tests from 13 shipments of samples, 18 safe, 24 unsafe, one suspicious; total of 63.1 per cent unsafe; Ceredo, Kenova and Catlettsburg, 40 tests from 14 shipments of samples, 11 safe, 12 unsafe, 17 suspicious total of 30 per cent unsafe; Ceredo (second utility), 19 tests from nine shipments of samples, 19 safe; Elkins, 10 tests from three samples, two safe, seven unsafe, one suspicious; total of 70 per cent unsafe.

Fairmount, nine tests from four shipments of samples, two safe, two unsafe, five suspicious; total of 22.2 per cent unsafe; Wheeling, 97 tests from 14 shipments of samples, 52 safe, 36 unsafe, nine suspicious; total of 37.1 per cent unsafe; St. Albans, 35 tests from 11 shipments of samples, 12 safe, 18 unsafe, five suspicious; total of 51.4 per cent unsafe; Clarksburg, 28 tests from eight shipments of samples, 21 safe, six unsafe, one suspicious; total of 21.4 per cent unsafe.

The publication of this data brought protests from a number of cities. Superintendent Herman E. Watt, of the Huntington Water Company, sent a vigorous denial of the published conditions of the city's supply. Mayo Tolman, chief engineer of the department replied that there had been a mistake on the part of the public service commission employe. Inspector Shepherd of the public service commission explained that his report on the safety of the water supply of 117 towns and cities of the state had been based upon the total number of tests made by the bacteriological department. The misunderstanding, he said, came because he did not specify between the raw river water and the water after it has been treated and passed through the various filtration plants.

#### Vote in Favor of Water Franchise.

Clayton, Mo.—Voters at a special election have decided to grant a 20-year franchise to the West St. Louis Water and Light Co. in return for a 25 per cent reduction in water rates to the community. The vote on the proposition was 202 for and 41 against it, about half the normal vote of the suburb. The opposition was from those who held that the granting of a 20-year franchise to the company would rob the entire community of much cheaper water rates in the event of the annexation of Clayton by St. Louis, which they feel is inevitable in the near future. The changed rates for the community will make them uniform with those of Maplewood and University City. There are various scales of rates.

## STREET LIGHTING AND POWER

#### Referendum Disapproves Council's Gas Rate.

Cincinnati, O.—Ratification of the ordinance of city council providing for a 35-cent gas rate for Cincinnati was refused by the voters at a special election by 9,544 votes. A total of 34,250 votes were cast on the ordinance proposition, 21,897 being against, and 12,353 for it. The vote against the ordinance was general in all parts of the city, and a much larger vote was cast on the ordinance than was registered for the regular party tickets. The total vote cast for the two party tickets was 23,267, which shows that 10,983 voters went to the various voting places and cast their ballot on the referendum and failed to express their opinion on either of the party tickets. The defeat of the 35-cent gas rate means that the gas consumers of Cincinnati will now pay the rate that will be decided for them by the state public utilities commission. Following the defeat of the ordinance, mayor Puchta gave out this statement: "This ordinance was drawn after due and deliberate investigation of all facts and information pertinent to matters of this character. In this connection, permit me to again say that expert advice was sought and received, public hearings had and rates prevailing in other cities obtained, all of which were carefully weighed in the balance. When the ordinance was finally passed it was considered by us that a good contract had been secured. The people thought otherwise, as indicated by the result of the referendum. We must defer our judgment to that of the people. It appears that only a continuance of the old rate of thirty cents, and no minimum charge, will be acceptable, and every effort should be made by us to do everything possible



to obtain such a rate. All information indicates that a thirty-cent rate, without a minimum charge, will not be acceptable to the gas company and that it will at once appeal to the State Public Utilities Commission to finally determine the same. This is its legal right, over which we have no control. I therefore recommend that council at once pass a new ordinance, fixing a thirty-cent rate, without a minimum charge." Before the election, the bureau of information and research in city hall gave out a statement denying that Cincinnati is the only city in which a 35-cent rate is charged. The fact is, said the bureau, Piqua, Troy, Tippecanoe City and Covington made new contracts in 1913 adopting a thirty-five cent rate. Their previous rate was thirty cents. Each of these towns, it was pointed out, must meet a minimum charge of seventy cents, whereas the Cincinnati minimum charge under the existing ordinance is only thirty-five cents.

Sidney has a forty-cent rate, adopted in 1913, with a minimum charge of seventy cents, according to the bureau.

There are a number of other Ohio places, continued the statement, which have a sliding scale of gas rates. Effective for a period of ten years in Lima, Wapakoneta, St. Marks, Celina, Coldwater, Ft. Recovery and Cridersville the rate adopted in 1915 is 50c for the first 1,000 cubic feet or fraction, 33c for the excess during the months from May to September, inclusive, and 30c for the excess during months from October to April inclusive. The average is 37 2-3c.

The net rate in Toledo has been 35c for the past ten years or more, subject to a minimum charge of 25c.

There is no rate ordinance in existence in this city, and the rate is therefore subject to change at any time.

The East Ohio Gas Company, which served the city of Cleveland under a ten-year ordinance, beginning 1911, in which rates of 31 cents, less 1 cent for cash, apply for six years, and 37 cents, less 2 cents for cash, will prevail for the last two years of the ordinance. The 35-cent net rate is therefore not as yet effective in Cleveland, but will automatically become so.

There are a large number of cities in Ohio served by the East Ohio Gas Company, prominent among them being such large manufacturing places as Youngstown, Akron, Canton, Massillon, Warren and Niles. The rate ordinances covering these cities are substantially alike, being for ten years, beginning about 1910. The rates in the ordinances for the first five years are fixed at 33 cents, less 3 cents cash discount, and for the second five-year period 38 cents, less 3 cents cash discount.

Generally, there is a minimum charge of 2,000 feet monthly consumption, which involves a minimum charge of not less than 60 cents net per month, increasing to 70 cents net during the second five-year period. The increase in these rates would be effective at present, but the East Ohio Gas Company has not as yet enforced its contracts, because of the discovery and production of large quantities of natural gas in Cleveland and its environs. Because of these productions of large quantities of gas right in the neighborhood being served, the East Ohio Gas company has withheld the increase in price, but, as officially announced, said increase would become effective as soon as the local production is materially diminished.

President Freeman, of the Union Gas and Electric Company, promised a number of improvements. He said: "It is believed Cincinnati will possess an advantage not as yet enjoyed by any other large city in regard to its natural gas supply. In past years the conditions in Cincinnati have been fully as favorable as they have been in Cleveland, Columbus, Toledo, Pittsburg and other cities dependent upon natural gas. Cincinnati is the only one of these cities which will, this year, have an auxiliary supply of artificial gas manufactured within the city, to be mixed with the natural gas. The increased facilities to be provided represent double the established shortage of the coldest days of last winter. Until recently it has been believed that natural and artificial gas could not be mixed with satisfactory results. Gas engineers have been at work on this problem for years, and have only during the past year succeeded in developing a process which will be put into use in Cincinnati. It is fully expected that the process will prove satisfactory. It is not probable that manufacturing establishments can be served with unlimited gas throughout the winter, but the supply will be unlimited for such purpose in all excepting the winter months."

#### Wholesale Increase Denied Missouri Utilities.

Jefferson City, Mo.—Some time ago the members of the Missouri association of public utilities made a request to the public service commission of the state, asking that they be allowed to increase the cost of water, gas and light by attaching a surcharge to all bills for the period of the war. The public service commission has handed down its decision, refusing the requested increase. The application asked that the increase be allowed because the price of coal, material and labor justified higher rates. They

asked the commission to waive an appraisal of their property because they needed more money immediately. The commission holds that each utility corporation must stand alone in its application for increased rates and must be prepared to make the same showing now as they did before the war. The decision affects some three hundred companies.

#### Profits of Canadian City's Municipal Utilities.

Edmonton, Alta.—City commissioner A. G. Harrison has given out a statement showing the surplus made by the various utilities owned by the city over and above operation and maintenance for the six months ending June 30, 1917. The surplus of the electric light and power plant was \$143,141.89, that of the telephone system was \$92,165.20, that of the waterworks was \$87,732.00, while the municipal street railway made \$42,488.04. The total surplus was \$365,537.13.

## FIRE AND POLICE

### Town Wiped Out By Flames.

Sumpter, Ore.—From a blaze originating in a hotel kitchen, the flames swept through the town and destroyed every business house and many of the residences, churches and halls. Only hard fighting at the outskirts saved the surrounding forest. More than 300 people were rendered homeless. The fire fighters saved the depot, the general hospital and the school and a few residences, but all else is gone. The water supply gave out thirty minutes after the fire started and left the workers powerless. As a last resort the fighters dynamited the drug store, one of the principal business blocks of the town, and several other buildings without avail. A Sumpter Valley train tried to reach the city, but had to turn back. A special train from Baker was rushed to Sumpter, carrying two hundred volunteer fire fighters and the equipment of the Baker fire department, but the assistance arrived too late.

### Fire Apparatus Antique Balks.

Lebanon, Ill.—A creaky, thirty-year-old hand fire pump that balked cost this town \$62,000 worth of property when a business block burned, threatening for a time the commercial section of the town. Four stores were destroyed. When the alarm was given Lebanon No. 1, the antique fire cart, was hurried to the scene. It refused to work, and the fire burned uninterruptedly a half hour until a hand fire engine from Summerfield could replace the Lebanon relic. The flames had gone too far to be stopped by small machines, and calls to neighboring towns were answered by the chemical engines from Willard and O'Fallon. The only near source of water in the city was in public cisterns on the corner, which were soon pumped dry. Lebanon has no city water works. Lack of fire fighting equipment causes Lebanon to pay high insurance rates. A proposition to put in a water system in the city was recently turned down. The city has but the one antiquated hand engine, which is worn out and useless, citizens say.

### Police Indicted for East St. Louis Riots.

East St. Louis, Ill.—Police officers and a prominent politician were among the men arrested on charges varying from rioting to murder in connection with the race riots here in July, in which more than one hundred white persons and negroes were killed. Of 105 persons indicted by the grand jury 39 were taken into custody, 30 of whom are white men. The indictments were returned against 82 white men and 23 negroes. Five policemen on duty at the time of the strike were arrested. Thomas Benton, for many years a leader in county politics, also was arrested on a charge of assault to kill. He is the owner of two saloons and has been a candidate for sheriff. The St. Clair County grand jury, in its report, says that after hearing all the evidence it believes the riots were deliberately plotted and there is room for a grave suspicion that a "shrewd, criminal, invisible hand" directed all the moves of the plotters for weeks prior to July 2, when the rioting reached its climax in wholesale slaughter and arson. This, the report says, would have been impossible but for the supine tolerance of "indolent public officials" who heard the rum-

blings, but remained inactive because they were "over-awed by cowardly inclinations." The jury expresses its opinion that the hand of a strong and fearless public official could have restrained these atrocities. The immigration of eight thousand or more negroes from the South and their employment in the places of white workmen in East St. Louis industrial plants is held to have been the basic cause of race intolerance which led to the rioting. It is asserted in the report that "engendered with false fears, negroes wantonly murdered policemen bent on aiding them," and that "a rival flame of passion" caused white men to murder negroes. The report asserts that a new form of aversion to the negro was caused by the changed industrial conditions and it tells of the mass meeting of May 28, when a delegation of more than five hundred white men called on mayor Mollman and demanded that the influx of negroes be stopped. "The denunciations were bitter and inflammatory," the report asserts, "and one of the speeches, in particular, advocated mob violence. The threats pronounced in the presence of the mayor ought to have placed the officials on their guard, but when the crowd left the city hall and walked up the streets of East St. Louis a number of negroes were attacked and the riot of May 28, 1917, broke out—all within half an hour after the speakers had finished." After this meeting and throughout June, according to the report, agitators worked among the people and tried to stir up bad feeling. This agitation went on among the whites and the negroes until members of each race thought members of the other were plotting to massacre them July 4. As that date approached there was increased unrest and apprehension. Policemen Coppedge and Wadley were killed by negroes July 2. The policemen had told the negroes they were there to protect them, as well as white citizens. White men in two automobiles drove through the streets and fired shots into the windows of negroes' homes. The grand jury describes the rioting later as "one of the wildest scenes of human carnage and destruction of property recorded in Illinois history." It asserts nearly 100 persons were killed and 245 buildings were burned, while, "with a few exceptions, the police stood by and made no effort to curb the fury of the mob." Meanwhile East St. Louis is not only practically bankrupt, but it faces damage suits aggregating millions of dollars as a result of the breakdown of law and order. When it was found that the city was helpless and could see no way in which efficient guardians of the law could be obtained the business men came to the front, conditioned on one stipulation—that order be restored and the officials of St. Clair county make good. Prominent men announced to attorney general Brundage that they have pledged themselves to raise a fund of \$100,000 out of their own pockets with which to establish a real police department in the city.

#### Spontaneous Combustion Causes Big Pier Fire.

New York, N. Y.—After an investigation of the fire which recently destroyed pier 26, Brooklyn, and damaged two steamers, fire marshal Thomas Brophy reported that the blaze had its origin in burlap bags and that spontaneous combustion was the cause. Several explosions after the fire started gave many persons the idea that incendiary bombs might have been placed on the vessels or on the pier. The fire marshal asserts that these explosions were due to the discharge of signal rockets on board one of the steamers. The total damage caused by the fire is estimated at about \$500,000. The destroyed pier was 748 feet long and 85 feet wide. It was of the old-fashioned type with a wooden shed and was piled with grain, sugar, hides, beans, and other merchandise. When the firemen arrived four alarms were turned in. All the fireboats from the river front and twenty tugboats of the auxiliary service aided in fighting the blaze. In less than half an hour the pier was a roaring mass of flames. Many of the smaller boats were towed out into the stream. Before one of the steamers could be moved her superstructure caught fire and the hawsers holding her to the pier were burned through. She was then towed into the river, where the fireboats poured water into her until the blaze was extinguished.

## GOVERNMENT AND FINANCE

### Joplin Mayor Recalled.

Joplin, Mo.—Mayor Hugh McIndoe has been recalled by a vote of 2,273 to 957 at a special recall election held after the presentation of a properly signed petition presented to council. The charges against the mayor deal with law enforcement, and it is said that his recall has been due to strict enforcement and antagonism aroused by the arrest of a locally prominent member of a powerful fraternity. Charles A. Robinson is now mayor and there has been a thorough shake-up in the police department.

### Big Business Man for Steel City Mayor.

Bethlehem, Pa.—Following an insistent and widespread demand from thousands of citizens, Archibald Johnston, vice-president of the Bethlehem Steel Company, has consented to become a candidate for the position of first mayor of the newly consolidated city. He has given out a statement that if he is elected he will organize his administration into departments of public affairs, of accounts and finances, of streets, of parks and public property, and of city planning. He states that he will appoint a city manager.

### Vote Against Increased Tax Rate.

Champaign, Ill.—The proposition to raise the city taxes from 1.2 per cent to 2 per cent has been defeated at a special election by a majority of 273. There were 314 men voted for the question and 518 against, and 142 women voted for and 211 against. The total vote for the proposition was 456 and 729 against. The city officials claim that the lower tax rate will result in handicaps to their administration and the postponement of improvements.

### To Draft Utility Legislation "In the Open."

New York, N. Y.—The Public Service Commission for the First District has announced a plan for "drafting legislation in the open." The law under which it was created explicitly authorizes the commission to recommend legislation which it deems wise or necessary in the public interest as to corporations and matters within its jurisdiction and provides that the commission may hold hearings and take testimony in respect to any matter of legislation. This method the commission proposes to apply to the formulation of future legislation amending the public service commission's law; the railroad law, the transportation corporation's law and other statutes affecting public service corporations and their rates and service. Corporations will be invited to submit their legislative proposals in advance for scrutiny. Individuals interested in the perfecting of legislation will also be invited to follow the same course. Every company under the jurisdiction of the commission has been invited to participate in hearings to which various individuals and public organizations, including the bar association, the central federated labor union and other organizations have also been invited to participate.

## STREET CLEANING AND REFUSE DISPOSAL

### Municipal Piggery Profitable.

Lansing, Mich.—After nine months of operation of the municipal piggery the city now has 190 pigs in its pens and its debt upon the establishment has been reduced from \$2,000 to \$1,300. The stock is valued at over \$4,000. Mayor J. Gottlieb Reutter, through whose efforts and past experience in handling stock, the municipal piggery was established, is very enthusiastic over the project after the nine months of experiment. The pigs being raised by the city are not of the thoroughbred type. They are bought up from time to time by the mayor from farmers and small stock raisers about the city. An effort is made to secure pigs which weigh between 50 and 100 pounds. With hogs selling for 14 cents a pound the city's profit upon one pig for the average period in which it is retained at the piggery would be \$12.60. Mayor Reutter considers that the municipal piggery is proving to be all profit, since the city



is relieved of the expense which would be incurred through the establishment of an incinerator. The Lansing piggery was given its start Nov. 6, 1916, when mayor Reutter, former city clerk McClellan and aldermen Decke, Rulison, Young and Reck acted as security for the borrowing of \$2,000 for the purchasing of 132 pigs and the erection of buildings and fences on the city farm. On the city farm of 16 acres, three acres have been fenced off for pigs. Sheds were put up for the housing of the stock. Additional sheds and pens were erected for the housing of those hogs which might need special attention. To facilitate the work during the winter the city administration took one of its worn asphalt paving engines to the piggery. During the winter the engine is used for the heating of the main building, the heating of water for the cleaning of the garbage cans, and for the thawing out of the garbage. That the pigs might have fresh water throughout the warm months the engine is used to pump water from the river, on whose bank the piggery is located, to a hog wallow. Prior to the establishment of the piggery the disposing of the city garbage by burial was costing the city approximately \$100 more a month. When the Cleveland Reduction Company, which held the contract for the hauling of the city's garbage, was dissolved the city officials took over the company's garbage cans for \$511. The company had been conducting the garbage collection at a cost of 10 cents a week to households and \$1 a week to restaurants and hotels. The city continued the garbage collection on the same cost basis. The company had been hauling its garbage cans by teams, but the city secured two large motor trucks and one small motor truck in addition to one team. Where the teams had been able to carry 100 cans a day the trucks are now able to carry 200 cans a day. The method of charging for the collection is to be changed according to a new ordinance. A service charge of \$1 a year is made to all users. No provision is made in regard to making an additional cost to the restaurants and hotels.

#### Company Must Pay City for Garbage.

New York, N. Y.—Supreme court justice Lehman has handed his decision in a suit brought by the city against the New York Disposal Corporation and others to recover about \$400,000 due under a contract made in 1913 by which the defendant agreed to buy the city's garbage for five years at \$62,500 the first year, \$87,500 the second, and \$112,500 for the last three years. The defendant paid nothing after October, 1914, on the ground that the city had represented that 340,000 tons of garbage was disposed of in 1912, whereas the amount was only 270,000 tons, and that the city also permitted others to take some of the garbage that should have been delivered to the defendant. A counterclaim for \$986,000 against the city because of shortage in the amount of garbage to which the defendant was entitled was made. Justice Lehman ruled that the city had made no representations and that it was not responsible for the failure of the defendant to get all the garbage collected. He decided that the defendant must pay the full amount sued for.

#### New Contract for Garbage Collection.

Pocatello, Ida.—According to announcement by Dr. C. T. Smith, health officer, the city of Pocatello has entered into a contract with K. F. MacDonald for the disposal of garbage, meaning all kitchen, fruit and table refuse not unfit for food for hogs. The city itself will undertake the disposal of ashes, cans and other refuse. The following regulations, covered by city ordinances, are to be observed in order to systematize the collection of waste, according to directions to householders:

- 1.—Provide yourself with a metal garbage can of at least 10 gallons capacity, having a tight cover with a bail or handle and with a flange of from  $\frac{1}{4}$  to 1 inch to hold cover on the can; also with a flange of from  $\frac{1}{4}$  to 1 inch on the bottom of the can to protect it from contact with the ground.
2. See that the cover is on the can at all times excepting when you are putting in or taking out garbage.
3. Put absolutely nothing in the can that is in any way injurious to hogs, namely, liquids, glass bottles, broken dishes, rags, metals, wood, chemicals, etc.
4. Put your can on the alley line if the alley is accessible; if not, put it in such place that it can be easily removed by the garbage collector.

5. Scald out your can at least once a week during the summer months.
6. Put your clean ashes in a box or barrel or pile them in a compact pile on the alley line.
7. Do not put cans, broken glass, bottles, metals, rags, etc., in with your ashes, but put them in a separate receptacle and cover it over to exclude flies; place near the ash pile on the alley line.

Garbage is being collected at least once a week from the residence district and once daily from the business district. The city has pledged itself in its contract to prosecute all violators of the regulations. Waste, other than garbage, will be collected at regular intervals by the city teams. Citizens are warned not to burn or otherwise destroy any kitchen, table or other refuse suitable for feeding swine.

#### Rules for Garbage Collection.

Flint, Mich.—The board of health recently issued the following rules regarding garbage collection. All garbage must be collected by the United Disposal & Recovery company, provided the same is placed in a metal can holding not more than 15 gallons, properly covered with a tight fitting lid. The can must be placed in an easily accessible place where it can be readily seen by the collector. All tin cans and unbroken bottles must also be collected by the United Disposal & Recovery company, provided they are placed in a separate metal can, properly covered similar to the ordinance garbage can. The city reorganized its garbage collection system a few months ago and the service is now very satisfactory. The rules for collection provide for the use of a water-tight receptacle of a good type that will hold garbage for three days in the summer and one week in the winter be provided by each householder. No particular type of can is specified. The householder also is required to provide a suitable receptacle for the keeping of tin cans and unbroken bottles. A license is required for the collection of garbage. Any violation of the ordinance is punishable by fine of \$100 or 90 days in jail, or both.

## TRAFFIC AND TRANSPORTATION

#### Car Strikes End.

Kansas City, Mo.—After complete suspension of service lasting eight days, the street car strike here has been settled. The settlement was achieved by a committee of business men which drew up an agreement which was signed by the company and the employees. All men are to return and resume their former places. Committees of employees will be received by the company officials and arbitration of disputes is provided for. There is to be no discrimination against union men, but there is to be an "open shop" policy—while the company's proposal for individual contracts was refused. After four days' strike several hundred strikebreakers were brought in, but the cars were attacked by mobs and one was burned—the strikebreakers were removed. A restraining order against strikers, city officials and any others preventing interference with car operation was granted by both the Kansas and Missouri courts. These temporary injunctions were obtained to keep the company from being thrown into the hands of a receiver by court order, according to a demand by the city officials. The city council attempted to stop strike-breaking by passing an ordinance licensing all conductors and motormen and requiring twenty days' experience at work in the city, under penalty of \$100 to \$500 fines.

Butte, Mont.—A thorough tie-up of all street car traffic, which lasted six days, was finally broken when striking employees and the electric railway company agreed. The men wanted increased wages without conditions, while the company insisted on giving increases based on the fluctuations in the copper market. The company offered 45 cents an hour for first-year men, 50 cents for second to fifth-year men and 53½ cents for all men with more than five years of service—with time and a half for overtime after twelve hours, based on the price of copper at 20 cents a pound and over. An amount of 2½ cents an hour would be de-

ducted when copper was below 20 cents; 5 cents when copper was below 18 cents, and an amount sufficient to bring back the old scale when copper was below 15 cents. The union demanded the elimination of the five-year clause, with 53½ cents an hour for the first year and 56¼ cents an hour for the second year and after, irrespective of the price of copper, with time and a half for work over ten hours. The strike was settled at a conference on Aug. 8 between officials and employees and mayor W. H. Maloney. The conference agreed on a scale of wages of 47½ cents, 50 cents and 53½ cents an hour for men whose employment extended over a period of one, two and more years. The agreement also provides for time and a half for all work over eleven hours. This is a flat scale of wages, fixed independently of the fluctuations of the copper market, in accordance with the men's demands.

Lima, O.—A settlement has finally been reached by the striking employees and the Ohio Electric Railway. The strike lasted over a month. The settlement, it is said, was hastened by the determination of the authorities to prevent a recurrence of the disorder that accompanied the attempt to resume service. The agreement provides for changes in wages and working conditions, but not for union recognition. Eight men are now in jail on charges in connection with the riot. After this governor Cox notified the company that no cars should be operated in Lima until further notice. This became necessary because of the state's inability to give the local officials aid from the national guard. Both sides made concessions, but the company refused to recognize the union. As far as possible it was agreed to abolish split runs, and cars will be operated in such a manner as to give the men nine and one-half hours' work for ten hours' pay. The wage scale provides 25 cents an hour for the first year, and an increase of 1 cent an hour for each additional year's experience up to five years. After this the men are to receive 30 cents.

#### Grade Crossing Gates Must Be Down at Night.

New York, N. Y.—The Public Service Commission for the First District has issued an order directing the New York Central Railroad, the Long Island Railroad and the Staten Island Rapid Transit Railway to keep the gates at 143 grade crossings lowered from midnight until 5 a. m. in order to protect vehicle traffic. Two others are to be kept closed between 2 and 5 a. m. Following hearings this measure was recommended by Commissioner Hervey. Before hearing an investigation had been made by the commission and data collected on the use made by vehicles and pedestrians of the principal crossings between the hours in question. The police department indorsed the plan, and at the request of the commission made an additional investigation of all the 145 crossings, after which it recommended the list of crossings which should come under the commission's order. The order is now in effect, and will remain so for one year unless abrogated in the meantime by the

commission. All of the railroads involved are said to be in favor of the plan. In his opinion, commissioner Hervey said that the crossing gates were not a sufficient safeguard to the public on account of negligent watchmen. The inspections disclosed that watchmen were frequently asleep during the early morning hours. Time clocks, to be punched at half-hour intervals, were tried out at certain crossings, but some gatemen found means of evading the scheme. Even thorough inspection by roundsmen had not proved altogether successful. The installation of signal semaphores to give a stop indication when the gates were up had also been considered.

### MISCELLANEOUS

#### A Woman City Engineer.

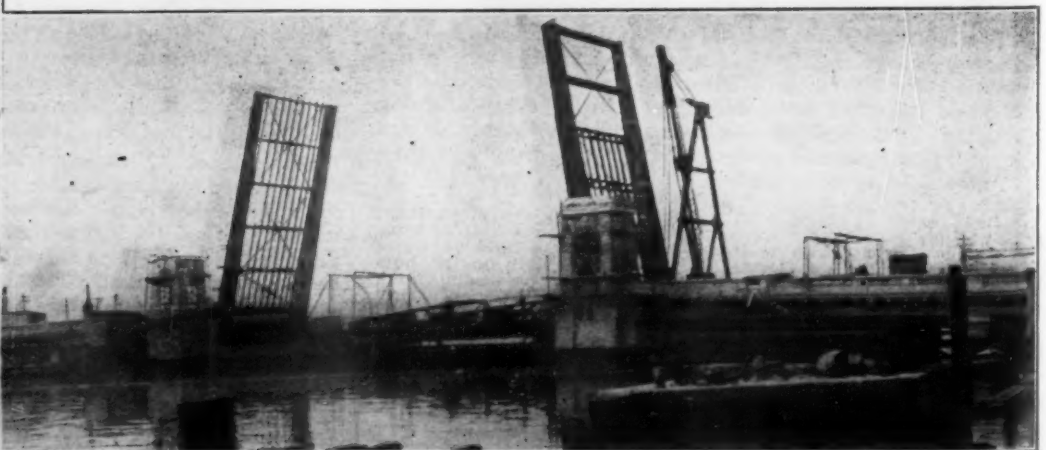
Williston, N. D.—Miss Esther Jack has been appointed city engineer and it is probably the first time in North Dakota or in the northwest that a woman has been appointed to such an office. She succeeds captain E. R. Evans, who has been called into federal service. Miss Jack is a graduate of the engineering department of the state university, being the first woman graduated from that department. She is the daughter of a well-known farmer living a short distance from Buford.

#### Bridge Nears Completion.

Bridgeport, Conn.—After nearly a year's work, half of the new Stratford avenue bridge is nearly completed and opened for use. Both of the big roller lifts are now in operation. Half of the bridge above the old bridge was in service while the old bridge was being demolished and until the other half is completed. The work on the other half of the bridge will be started later and probably will not be opened until a year from now. The half nearly finished is almost as large as the whole of the old bridge, however, so the public will be but slightly inconvenienced while waiting for the completed structure. The large roller lifts allow a channel more than twice as large as the old one, and which open very rapidly, causing little delay. At the present time, however, while the old bridge is in use, the old draw has to be opened after the new roller lifts are raised, so that tie-ups of traffic are frequent while boats are being let through. The bridge is built of steel and reinforced concrete, the concrete being "cast stone," made by the Concrete Building and Construction company. The stone resembles granite so closely that it is almost impossible to tell the difference. Instead of building the bridge of one solid piece of concrete, each stone is cast and placed in position, 684 stones being used. The bridge will have four little houses, one on each corner, when it is completed. Two of these houses will be comfort stations, one for men and the other for women, and the other two will be operating houses. Two of these houses are now in position. Each has a different angle or is different in size. Windows and openings for the city seal upset the sides of the houses so that it is impossible to build it of stones of even size and shape. Consequently, all of the 684 stones have to be cast in different moulds.



BRIDGEPORT'S NEW BRIDGE.  
Courtesy, Bridgeport (Conn.)  
Standard-American.





## NEWS OF THE SOCIETIES

### Calendar of Meetings.

**Aug. 27-29.—UNION OF CANADIAN MUNICIPALITIES.** Annual convention, London, Ont. Secretary, W. D. Lighthall, K.C., Westmount, Que.

**Aug. 28-30.—PENNSYLVANIA LEAGUE OF THIRD CLASS CITIES.** Annual convention, Harrisburg, Pa.

**Aug. 29-31.—UNION OF NOVA SCOTIA MUNICIPALITIES.** Annual convention, Truro, N. S. Secretary, Arthur Roberts, Bridgewater, N. S.

**Aug. 29-31.—ONTARIO MUNICIPAL ASSOCIATION.** Annual convention, Toronto, Ont. Secretary, B. H. Spence, 705 Lumsden building, Toronto, Ont.

**Sept. 10-12.—AMERICAN CHEMICAL SOCIETY.** Fifty-fifth annual convention, Boston, Mass.

**Sept. 10-15.—NATIONAL EXPOSITION OF SAFETY AND SANITATION.** Annual conference, New York, N. Y. Secretary, W. C. Cameron, Continental and Commercial Bank building, Chicago, Ill.

**Sept. 11-13.—AMERICAN ASSOCIATION OF PARK SUPERINTENDENTS.** Annual convention, St. Louis, Mo. Secretary, Roland W. Cotterill, 533 City Hall, Seattle, Wash.

**Sept. 11-14.—INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS.** Annual convention, Niagara Falls, N. Y. Secretary, Clarence R. George, Houston, Tex.

**Sept. 11-14.—NEW ENGLAND WATERWORKS ASSOCIATION.** Annual convention, Hartford, Conn. Secretary, Willard Kent, 715 Tremont Temple, Boston, Mass.

**Sept. 18-20.—LEAGUE OF IOWA MUNICIPALITIES.** Annual convention, Iowa City. Secretary, Frank G. Pierce, Marshalltown, Ia.

**Sept. 18-20.—LEAGUE OF VIRGINIA MUNICIPALITIES.** Annual convention, Lynchburg, Va. Secretary, L. C. Brinson, Portsmouth, Va.

**Sept. 24-29.—LEAGUE OF CALIFORNIA MUNICIPALITIES.** Annual convention, Santa Rosa, Cal. Secretary, Wm. J. Locke, Pacific Building, San Francisco, Cal.

**Sept. 24-29.—THIRD NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.** Exposition, Grand Central Palace, New York City.

**Sept. 25-27.—SMOKE PREVENTION ASSOCIATION.** Annual convention, Columbus, O. Secretary, Frank A. Chambers, City Hall, Chicago, Ill.

**Sept. 27-29.—AMERICAN AND CANADIAN ENGINEERS AND ARCHITECTS OF NORWEGIAN BIRTH OR DESCENT.** Informal congress and re-union, Chicago Norske Klub, Chicago, Ill. Chairman, Committee on Arrangements, Joachim G. Glaver, consulting engineer, Chicago, Ill.

**Oct. 9-12.—LEAGUE OF KANSAS MUNICIPALITIES.** Annual convention, Wichita, Kan. Secretary, C. H. Talbot, University of Kansas, Lawrence, Kan.

**Oct. 15-17.—NATIONAL HOUSING ASSOCIATION.** Annual conference, Hotel La Salle, Chicago, Ill. Secretary, Lawrence Veiller, 105 East 22d St., New York City.

**Oct. 17-18.—LEAGUE OF MINNESOTA MUNICIPALITIES.** Fifth annual convention, St. Cloud, Minn. Secretary-treasurer, Richard R. Price, University of Minnesota, Minneapolis.

**Oct. 22-24.—AMERICAN CIVIC ASSOCIATION.** Annual meeting, St. Louis, Mo. Secretary, Richard B. Watrous, 914 Union Trust building, Washington, D. C.

**Oct. 28-30.—TEXAS CONFERENCE ON SOCIAL WELFARE.** Annual convention, Houston, Texas.

**Nov. 19-24.—CITY MANAGERS' ASSOCIATION.** Annual meeting, Detroit, Mich. Secretary, W. L. Miller, City Manager, St. Augustine, Fla.

**Nov. 20-23.—PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA.** Recreation Congress, Milwaukee, Wis.

Secretary, H. S. Braucher, 1 Madison Ave., New York, N. Y.

**Nov. 21-24.—NATIONAL MUNICIPAL LEAGUE.** Twenty-third annual meeting, Hotel Statler, Detroit, Mich. Secretary, Clinton Rogers Woodruff, 703 North American Bldg., Philadelphia, Pa.

### Chicago Cement Machinery and Building Equipment Show.

The announcement by the Cement Products Exhibition Co. that there would be no cement show in 1918, and the latter announcement by the National Exhibition Co. of the coming Cement Machinery and Building Equipment Show, to supersede the annual cement shows, have caused several of last year's exhibitors to ask about the management and scope of the coming exhibition.

Prior to either announcement, investigations were conducted, with the co-operation of the trade papers, first to ascertain the attitude of tenth show exhibitors toward another cement show, and second, to ascertain from manufacturers in other building lines, their attitude toward representation with exhibits at the shows. When it was found that a big majority of cement show exhibitors favored another exhibition and that producers of other building materials were anxious to exhibit a new and independent company was organized, not to conduct a mere cement show, but to conduct a contractors' and builders' show.

Cement shows, clay product shows, good road shows, etc., have been held in the past with varying success. Frequently it happened that manufacturers exhibited at two shows at the same time. It is the hope of the management, by means of the coming show, to convert several small or partial successes into one huge success.

Under the new plan, Chicago becomes the logical meeting place for many conventions. Negotiations are now pending to bring to Chicago meetings of the American Society of Engineering Contractors, the American Water Works Association, the National Sand & Gravel Users' Association, the American Highway Association, the American Road Congress, the National Paving Brick Manufacturers' Association, etc.

### Iowa Association of Chiefs of Police and Special Agents.

The annual convention of this association was held August 14 and 15 at Marshalltown, Ia. Attendance at the opening meeting was much less than was expected. There were only about twenty present when the business session opened. Tuesday afternoon the officers listened to addresses by United States Marshal E. R. Moore, of Dubuque, and Deputy United States Marshal Michael Healy, of Cedar Rapids, and County Attorney Ray P. Scott. County Attorney Scott led discussion of the "bone dry" and the Webb-Kenyon laws.

Practically all of the forenoon session today was devoted to an informal discussion of the efforts of the association and its friends in the general assembly to get through a measure to put chiefs of police under civil service. Such a bill was defeated in the general assembly last winter. The chiefs of police are agreed that their office should be under the civil service, the same as is the office of chiefs of fire departments.

United States Marshal E. R. Moore, of Dubuque, gave the principal address of Tuesday afternoon, during which he heartily thanked the members of the association for their co-operation throughout the northern district, in preparing for the recent registration, declaring that the successful outcome of the undertaking was largely the result of their united efforts in the matter.

Fort Dodge was selected as the place for the 1918 meeting and officers elected as follows: Chief of police M. J. Jordan, of Fort Dodge, re-elected president, and Chief Charles F. Breckel, of Marshalltown, was again chosen as vice-president. Martin Burke, of Dubuque, special agent of the Illinois Central railroad, was elected secretary and treasurer.

### National Exposition of Chemical Industries.

During the week of Sept. 24th there will be held in the Grand Central Palace, New York, the Third National Exposition of Chemical Industries, that will portray the progress our chemists have been making toward preparing the nation for its great war and for the place it must occupy in the world's commerce after the coming of peace.

One of the managers of the Exposition, Charles F. Roth, a member of

(Continued on page 212)

## PERSONALS

Hendricks, Calvin W., chief engineer of Baltimore, Md., has resigned to take effect October 1. Engineer Hendricks was the builder of Baltimore's \$23,000,000 sewerage system.

Leavitt, H. Walter, has been appointed testing engineer for the Maine State Highway Commission, succeeding E. D. Kingman. Mr. Leavitt was recently employed by the office of public roads and rural engineering at Washington, D. C., as student assistant testing engineer. The testing laboratories of which he now has charge are located at the University of Maine, Orono, Maine.

Mullican, N. S., city manager of the city of Thomasville, has resigned the position as city manager to accept the place of chief highway engineer of Davidson county, North Carolina. Mr. Mullican has been retained by the city of Thomasville as consulting engineer.

Quail, Joseph N., has been appointed by Mayor Mitchel, of New York, as supervisor of the City Record, succeeding David Ferguson, who has resigned on account of ill health.

# NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

## STEAMOTOR TRUCK.

### A New Type of Commercial Vehicle Run by Steam.

The Steamotor truck utilizes the Doble steam power plant for automobiles, which has stirred such wide interest in its use in pleasure cars. Extreme simplicity, record economies and ease of operation are claimed for the machine. The power plant of the Steamotor truck has only 24 moving parts, of which fifteen are in the engine. There is no clutch, no gear set and no complicated driving mechanism. A short drive shaft connects the engine to the rear axle and practically all the power developed is delivered at the wheels. The truck is claimed to go up any hill upon which its wheels can find traction and because of evenness of torque and availability of all the power at low speeds it can go through sand or rough places.

The truck uses only kerosene for fuel—no gasoline is necessary even for starting purposes. The burner is lighted by an electric spark and there is no troublesome pilot light or similar mechanism.

The turning of a switch on the steering post ignites the fuel and the truck is ready for duty. It is claimed that from a perfectly cold start steam is developed in less than a minute and after an over-night stand in ten or fifteen seconds.

The Doble combustion system and steam generator are simple and efficient. With the Doble system of condensing the exhaust steam and reusing it, it is held to be possible to run from 800 to 1,000 miles on one supply of water. The power plant consists essentially of the steam and water system, the fuel and combustion system and the engine or power transmission system. The design of the generator is based on the water-tube type and carries a water level in the

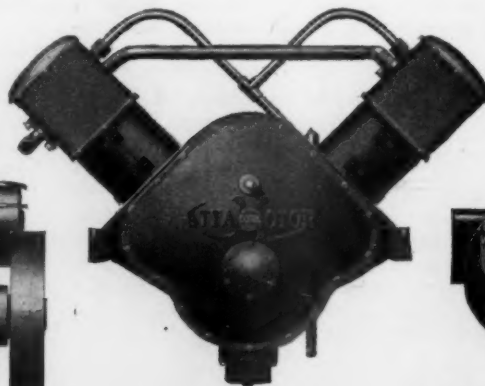
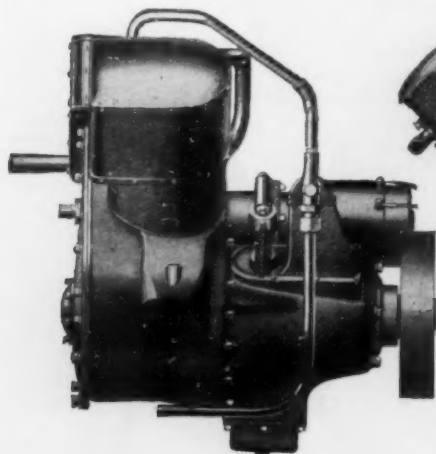
evaporating zone. It consists of 28 identical sections placed in an insulated casing. Each section consists of two horizontal headers connected by sixteen vertical tubes. They are made entirely of cold drawn seamless steel tubing of about one-half inch diameter. The vertical tubes are swayed and welded to the headers by the autogenous acetylene process, making the joints really stronger than the tubing itself. The combustion chamber is directly beneath the steam generating sections, while the exhaust for burned gases is below the economizer sections. The intake water manifold delivers water simultaneously to the economizer sections through their lower headers, the water being forced in by a crank-driven plunger pump. When the economizer sections are completely filled, the water overflows from the upper headers into a manifold, which delivers it simultaneously to the lower headers of the evaporating sections. Here the water level is maintained about half way up the generator by means of a by-pass valve and a regulator tube so arranged that it expands when full of steam, so that more water enters, and contracts when there is sufficient water. The hot gases rise from the combustion chamber, giving up their heat to the closely grouped vertical tubes, pass over the bridge wall, and a large number of their remaining heat units are absorbed by the relatively cool water flowing through the economizer sections. The generator is thus designed to possess the most distinctive advantages of both fire-tube and flash boilers.

The normal steam pressure in the generator, while power is being used, is 600 pounds. Pressure is maintained at the throttle by an automatic device which cuts off or renews the fuel supply according to the variation of the pressure from normal. Every section

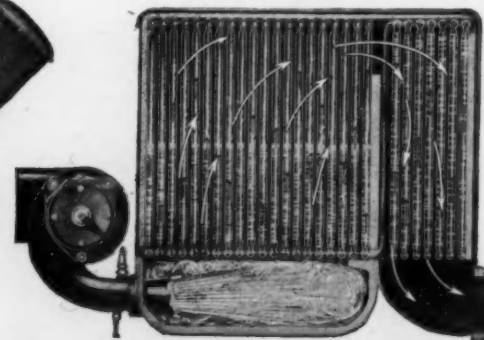
of the generator is tested to withstand an hydraulic pressure of 5,000 pounds, and the actual bursting point is over 8,000 pounds. There is also attached to the generator tubing a safety valve which operates if the steam pressure reaches 1,000 pounds. The generator produces 45 horsepower and has 150 square feet of heating surface.

The live steam is led from the upper headers of the generator into the manifold, passes through the throttle valve and down the steam chest of the engine. The engine is two-cylinder, single-expansion, double-action. The counterflow principle is employed in order to insure that maximum torque be obtained at any position of the crankshaft. The slide valves, one for each cylinder, take care of both the inlet and exhaust. The valves are actuated by a specially designed link valve-gear, which allows a cut-off of 80 per cent of the stroke for starting. The cut-off in normal operation is 20 per cent. This valve gear also reverses the engine without additional devices. The engine is of the V-type, the cylinders being set at an angle of 90 degrees, one crank serving for both. The cylinders are 4-inch bore by 4-inch stroke, which with the standard gear ratio produces enough torque to slip the driving wheels with the truck fully loaded. The crank case is an aluminum alloy casting, and contains all of the moving parts of the engine except the piston and valves. The ball bearing eccentrics for the valve gear are on the return crank just ahead of the main crank. The eccentric which drives the boiler feed-pump and the lubricating pump, together with the governor, are situated between the main bearings. The crankshaft and the main bearings are annular roller.

The lubricating system is a splash and force feed combined—eccentrics, connecting rods and governor by the former and cross-heads and wrist pins by the latter. The oil remains cool



SIDE AND FRONT VIEWS OF STEAMOTOR ENGINE.



SECTIONAL VIEW OF DOBLE GENERATOR (Large arrows indicate flow of gases of combustion; small black arrows show flow of water.)



and clean and should last several seasons.

Kerosene is used both for starting and running. Air, drawn through the radiator by a small electrically-driven multivane blower, passes the spray nozzle with a sufficient velocity to draw out the kerosene and atomize it. This velocity immediately decreases, due to the widening of the venturi tube and the full mixture is ignited by an electric spark. As soon as the burner is lighted the spark ceases automatically. The combustion takes place in a chamber made of special refractory material, which attains a very high temperature and insures complete combustion by heating the gases before they burn.

The exhaust steam from the cylinders is carried to the top of the radiator and is forced down through it by the pressure of the following steam. A honeycomb type radiator is used. The water of condensation enters the water tank very near the bottom. Any steam that enters is therefore condensed by going up through the water—and in addition there is a steam vent at the top of the tank.

The lubrication of the throttle and cylinder valves, the cylinder walls, the interior of the generator, and the water pumps, is accomplished by the addition of a small quantity of standard cylinder oil to the water. The oil is pumped into the cylinder along with the water and there performs several functions. It coats every portion of the generator interior with a film of oil, which is very thin at the 485 degrees F. temperature maintained. The oil protects the surface from scale and rusting also and prevents particles of oil from adhering and finally clogging some passage. The throttle valve, valves and pistons of the engine are lubricated by oil carried along with steam bubbles.

The engine is fastened to the frame at three points. The power is transmitted to the rear axle by a propeller shaft. Two universal joints of very rugged construction are employed, and adequate lubrication is insured by a duct from the pressure feed of the engine.

Axles are Timken—front is I-beam section,  $2 \times 2\frac{3}{4}$ , solid center—rear axle, worm driven—drive axle full floating,  $1\frac{3}{8}$ -inch diameter. Brakes are hand

brake and foot brake internal duplex on 17-inch brake drum on rear wheel.

Chassis is  $212\frac{1}{8}$  inches long, overall; length of frame back of driver's seat is  $116\frac{1}{2}$  inches, wheel base, 114 inches. The frame is pressed steel channel,  $\frac{1}{4}$  inch thick,  $5\frac{11}{16}$  inches deep,  $2\frac{1}{2}$  inches at top and bottom. The springs are semi-elliptic. The tires are pressed on or demountable. Wheels are artillery type,  $2 \times 1\frac{3}{4}$ -inch, rectangular in front,  $2\frac{1}{2} \times 2\frac{1}{4}$ -inch rectangular spokes in rear. The total admissible load on chassis, including body is 5,500 pounds. The rated capacity of truck is 4,000 pounds.

The accompanying illustrations show the chassis and various views of the engine and generator. The truck is made by the Steamotor Truck Co., 110 South Dearborn street, Chicago, Ill.

#### MANHOLE COVER.

##### Designed to Withstand Heavy Traffic.

The need of a manhole cover which traffic cannot "dish" or jog out of place is recognized every working day by street superintendents and public works officials. To supply this need a specially designed cover has



DEE MANHOLE COVER.

been developed which is claimed to withstand the stress of the heaviest traffic.

It is constructed with dovetailing lugs which are calculated to insure adequate protection against any pressure exerted on the cover. Another advantage claimed is that the cover does not rattle, but settles firmly in place. The cover is also claimed to be frost-proof and easily opened during freezing weather.

The cover is shown in the accompanying illustration. Among other municipalities, the village of Oak Park

Ill., and the city of Chicago's electrical department, as well as the South Park commission, have adopted this type of cover. It is made by the Wm. E. Dee company, 30 North La Salle street, Chicago, Ill.

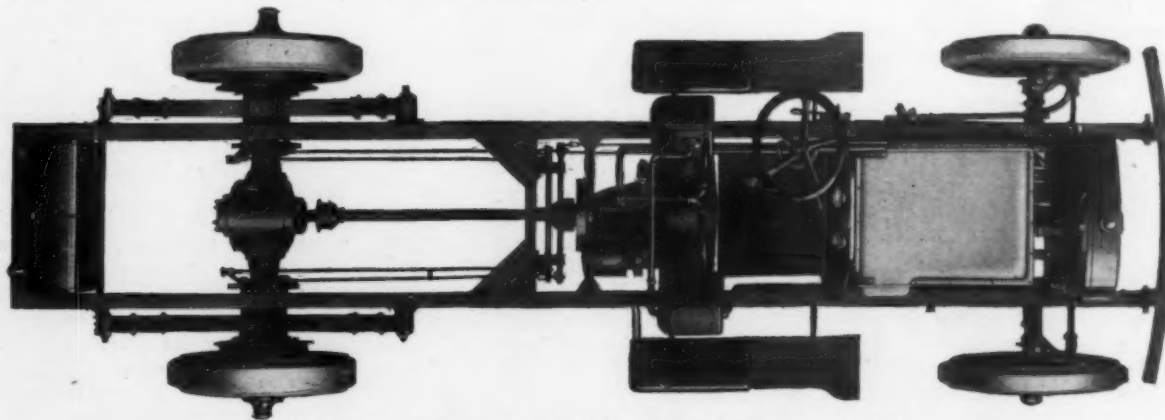
## INDUSTRIAL NEWS

**Cast Iron Pipe.**—Prices continue very high. There has been little new business except a few orders from the west and more government work. Minneapolis, Minn., is expected to enter the market for about 1,300 tons and Wauwatosa, a suburb of Milwaukee, will buy 200 tons. The government has ordered 500 tons of 6-inch for the aviation camp at Grassland, Ill. Quotations: Chicago—4-inch, class B, \$68.50; 6-inch and larger, \$65.50; class A, \$1 extra. New York—4-inch, class B and heavier, \$68.50; 6-inch, \$65.50. Birmingham—4-inch, class B and heavier, \$63; 6-inch, \$60; class A, \$1 extra.

**Trade With Venezuela.**—Practically all of Venezuela's imports of construction materials and supplies are now coming from this country, but we are in danger of losing much of the trade as soon as the war is over. Just where the danger lies and what the trouble is is carefully explained by Special Agent W. W. Ewing in a publication, "Markets for Construction Materials and Machinery in Venezuela," Special Agents Series No. 144. Copies may be obtained at 10 cents each at the Bureau of Foreign and Domestic Commerce, Washington.

**The Society for Electrical Development, Inc.,** 29 West 39th street, New York City, is distributing a new bulletin, entitled "Aims and Achievements." This is a brief summary of what the society is accomplishing for its members and for the entire electrical industry. This bulletin describes just what this society is, how it has grown, what its work includes and gives a complete directory of its members, officers and committees.

**The George Cutter Company,** South Bend, Ind., announces the appointment of R. W. Ten Broeck and A. B. Sonnenborn as sales representatives for the



AIRPLANE VIEW OF CHASSIS OF STEAMOTOR TRUCK.

state of Michigan, with offices at 425 Ford building, Detroit. In connection with the sale of street and industrial lighting equipment, switches, panelboards, switchboards, cutout boxes and other products of the George Cutter Company, an engineering department will be maintained for the purpose of drawing up plans and specifications for the installation of such equipment. Mr. Ten Broeck was associated with the Packard Motor Company for a number of years.

### NEWS OF THE SOCIETIES

(Continued from page 209)

the American Chemical Society, said that, "never had any nation ever before been brought so forcibly to a realization of how dependent upon chemistry all its industries were as when the United States found itself facing an industrial emaciation, and it brings great credit upon the American chemist for the part he has taken in bringing the country to a state of self efficiency and self containedness. He has accomplished in a couple of years what it has taken our enemy nation forty years to perform, and with the aid of our financiers has built whole towns and given employment to the great army of unemployed who constituted so grievous a problem in the United States three years ago.

"In the past year, and even since the last exposition, in September, 1916, such great strides have been made in the industries, so many new applications of things chemical, and the introduction of chemicals, either directly or indirectly, in modern warfare and materials of war, that the exposition will be one of thrilling inspiration to the person possessing some knowledge of chemistry, and to the lay mind that will easily be able to grasp the vital meaning of the great many exhibits that the few hundred large companies are preparing.

"The purposes of the exposition are not to show the progress made in all the chemical industries but to indicate where progress can be made, and where opportunities await development, and how our national resources and wastes can be made valuable and useful.

"It gives the man of science, the financier, manufacturer, and plant operator the opportunity of personal contact with the latest machinery, materials, and products used and applied in all the chemical industries, and the opportunity of learning how they can be applied to his specific purposes."

This year again the South invites capital and industry to investigate the wonderful opportunities it offers in its undeveloped resources for all manner of industry, in a great section of exhibits known as the Southern Opportunity Section.

On Monday, Sept. 24th, at 2 P. M. opening addresses will be made by Dr. Charles H. Herty, chairman of the advisory committee of the Exposition

and editor of the Journal of Industrial and Engineering Chemistry, by Prof. Julius Stieglitz, president of the American Chemical Society, Dr. Colin G. Fink, president of the American Electro-chemical Society, and Dr. G. W. Thompson, president of the American Institute of Chemical Engineers.

Among other speakers on the program for other days are W. S. Kies, vice-president National City Bank, who will speak upon the "Development of Export Trade with South America;" Prof. Marston Taylor Bogert, chairman, chemistry committee, National Research Council, who will speak upon "The Operation and Work of the National Research Council for the National Weal." Dr. L. H. Baekland of the Naval Consulting Board will make an address on "The Future of American Chemical Industry."

One day a symposium upon the national resources as opportunities for chemical industries will be given, and among the speakers will be C. H.

Crawford, Ass't to president, Nashville, Chattanooga & St. Louis Ry.; V. V. Kelsey, chemist-industrial agent, Carolina, Clinchfield, and Ohio Ry.; Dr. E. A. Schubert, mineralogist-geologist, Norfolk & Western Ry.; Dr. T. P. Maynard, mineralogist-geologist, Central of Georgia Ry. and Atlantic Coast line Ry.; Dr. J. H. Watkins, geologist, Southern Railway.

The motion picture program will be one of wide interest. The Bureau of Commercial Economics at Washington will supply many toward completing the range of industrial films.

### Western Pennsylvania Firemen's Association.

The annual convention of this association was held at Irwin, Pa., Aug. 16 and 17. Meyersdale was selected as the convention city for 1918 and the following officers elected: W. E. Debolt, Connellsville, president; William H. Sharah, Braddock, secretary, and James H. Steele, Wilkensburg, treasurer.

## PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Chenoa, Ill., is making STREET IMPROVEMENTS. The engineers for the work are Melliush & Broyhill, Unity building, Bloomington, Ill.

Beresford, S. Dak., is planning ROAD IMPROVEMENT work by filling and is now receiving bids. The Dakota Engineering Co., Mitchell, S. D., has charge of the work.

Bids are being received by the village of No. St. Paul, Minn., for GRADING and STREET IMPROVEMENT. F. J. Armstrong, 721 Germania Life Bldg., St. Paul, is engineer.

The Highway Commission of District No. 1, Yazoo City, Miss., has laid out a large program of ROAD improvement. The work is under charge of W. H. Bradley, Flora, Miss.

San Angelo, Tex., is about to construct a complete SEWAGE DISPOSAL plant from plans prepared by Henry Exall Elrod, Interurban Bldg., Dallas, Tex.

Leola, S. D., is receiving bids on a reinforced concrete RESERVOIR. The Dakota Engineering Co., Mitchell, S. D., are the engineers for the city.

Bids are being received by Corning, N. Y., for CONDUITS and the improvement of Monkey Run according to plans prepared by Solomon, Norcross & Keis, engineers, Atlanta, Ga., and Watervliet, N. Y.

The city of Oswego, Ore., is receiving proposals for PAVING several streets with concrete. The plans were prepared by D. W. Taylor, 507 Board of Trade Bldg., Portland, Ore.

Sedan and Arcadia, Kans., have had under consideration the construction of WATERWORKS. City officials have been in conference with E. T. Archer & Co., 609 New England building, Kansas City, Mo.

Lakota, N. D., is constructing WATERWORKS. The engineer for the improvement is T. R. Atkinson, Bismarck, N. D.

Burlingame, Kan., is calling for bids on WATERWORKS improvements. Black & Veatch, Interstate Bldg., Kansas City, Mo., are the engineers.

Comfrey, Minn., is planning to construct a SEWAGE DISPOSAL plant and has engaged Jones & Curtis, Fairmont, Minn., to prepare plans.

Plans for a SEWAGE DISPOSAL plant for Gallup, N. M., are being prepared by Burns & McDonnell, Interstate Bldg., Kansas City, Mo.

Newkirk, Okla., is planning to construct a large amount of PAVING and has retained, as consulting engineers, the Benham Engineering Co., Colcord Bldg., Oklahoma, Okla.

Otis, Colo., is receiving bids on a WATERWORKS system. The engineer is R. D. Salisbury, 1415 East Colfax avenue, Denver.

The town of Washington, N. J., plans enlarging its SEWAGE DISPOSAL plant, adding septic tanks and enlarging sewage beds. The work is to be done under the direction of Clyde Potts, 30 Church street, New York.

In constructing SEWAGE DISPOSAL and WATER SUPPLY systems at the Industrial Home for Women, Muncy, Pa., Albright & Mebus, Land Title Bldg., Philadelphia, were called upon to prepare the plans.

Lycoming County, Pa., is calling for bids on two concrete arch BRIDGES over the West Branch of the Susquehanna River at Williamsport. The county commissioners retained to prepare plans and supervise construction M. C. Krause, 335 Pine street, Williamsport.